An Address
ON
THE DIFFERENTIAL DIAGNOSIS OF SURGICAL DYSPEPSIAS.

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The surgical lesions giving rise to dyspepsia are not only of relative frequency and of a serious nature, but are very prone to be mistaken for less important conditions; and since they are capable of being relieved only by adequate surgical treatment, I have considered that a discussion of the methods whereby an accurate diagnosis can be arrived at will be of practical interest.

The clinical history will in these cases be of the greatest value, and, as Moynihan[41 43] has so clearly pointed out, it alone may be sufficient to indicate the nature and site of the lesion. I shall therefore first draw attention to the variations in the symptoms as they occur in gastric ulcer, early gastric carcinoma, duodenal ulcer, gall stones, and some cases of appendicitis, and shall then consider the physical signs which may be present at the same time.

Discomfort and Pain.

Of all symptoms this is the most important, for in the majority of cases it is pain that causes the patient to seek advice, even if it is not the first symptom to appear. At the same time it is often so insidious in its onset that the discomfort or even actual pain which the patient describes as dyspepsia may be present for some months, or even years, before relief is sought. Although in the diseases which I am here considering he will nearly always complain simply of dyspepsia, careful investigation of the nature of the actual symptoms will often show that they vary considerably with the different lesions.

With a chronic gastric ulcer the onset is insidious, there is complaint at first of slight discomfort following soon after the ingestion of food, the discomfort is situated in the epigastrium, and is at first distinctly local. Later it becomes severe, and is, in fact, definite pain. This, again, may be localized to the epigastrium or may start here and then radiate to the right or left, being usually described as of a burning or boring character. As a general rule, the longer it has existed the more does it radiate; in the majority of long-standing cases it passes through to the back, and may be felt at the level of the sixth to eighth dorsal vertebrae or under the angle of the scapula. The most characteristic fact concerning this pain is that it is relieved as the stomach empties, so that it is definitely regarded as being due to the food, and with certain articles of food which are generally regarded as being indigestible the pain is more marked. Another characteristic is that it is present in attacks which may last for some days or weeks and then be followed by relief for two or three months, these attacks of pain in all probability being dependent upon exacerbations of the chronic ulcer, but in all cases the presence of pain is a prominent feature. Sir Bertrand Dawson[7] found that in 60 cases the pain was the most marked symptom in all but one. The time of onset of the pain after food is very variable. In some cases it may occur immediately, and be present before the meal is finished, whilst in others it may not be felt until two or three hours after the meal, and thus resembles the pain of duodenal ulcer. The time of the onset of the pain has been regarded as indicating the site of the ulcer, occurring earlier with ulcers nearer the cardiac end. The fact that the time of onset of the pain is generally constant in the individual patient would lend colour to this belief. The evidence of Sir Bertrand Dawson's cases, did not, however, support this view. Thus of the 60 cases 23 showed pain immediately after food, but in 19 of these the lesion was near the pylorus and associated with obstruction. It is probable, however, that with obstruction this indication would be valueless, and the pain immediate, for the stomach would tend to lose its normal shape and become converted into a single-chambered viscus.

With typical cases of gastric carcinoma a marked difference is seen in the character of the pain. It must be remembered, however, that carcinoma may occur either as a complication of gastric ulcer or arise in a stomach apparently free from previous disease, the symptoms in the two cases being different. The first group, those in whom there has been a previous chronic gastric ulcer, are the more common. Thus, Mayo Robson[35] found 57 per cent. of this variety, and Moynihan[39] 60 per cent. Mansell Moullin[30] found that in over 60 per cent. of his cases the patients had been told previously that they were subjects of chronic gastric ulcer. And in quite half the rest there were symptoms of such previous trouble. Wilson and MacCarty[58] place the figures as high as 71 per cent. Mayo,[31] in his earlier series found previous ulcer in 54 per cent., but in his later series of 216 gastrectomies, reported by MacCarty,[27] of 158 carcinomas, 125, that is 79 per cent., showed evidence of previous ulcer.

In this group there is the history of many previous attacks in which the pain was typically that of gastric ulcer. In the last attack, however, its character has altered; the intervals of freedom between the meals gradually shorten, and then disappear altogether, so that the pain becomes constant, although it may still be increased by food. At the same time, if the pain has been severe in the previous attacks, it tends to decrease in severity, so that there is complaint of slight but constant pain.

When the disease occurs in a patient previously free from any evidence of gastric trouble, the age at which the pain appears becomes an important factor. Most commonly the condition occurs after the age of 40. As Hale White[15] points out, there is an enormous number of people over that age with dyspepsia and no organic lesion, but such usually have symptoms of dyspepsia when they are young adults. "If symptoms of serious chronic gastric indigestion first appear after the age of 40, organic disease of the stomach should be strongly suspected." But at the same time it must be remembered that carcinoma may start at a much earlier age than this. Canny[5] has recorded a case in a boy aged 19. In many of these cases pain is an insignificant symptom—there may be a sudden or a gradual onset of other symptoms, and but little or no pain complained of throughout the course of the disease. When present it is usually of the nature of a constant discomfort, as in the last group, and not a severe pain, this discomfort becoming perhaps definite pain after food, and being more marked after solid than after fluid nourishment. It may be severe enough to keep the patient awake at night.

Although in typical cases the pain of carcinoma is distinct from that of gastric ulcer it must be remembered that unfortunately but few cases are typical in this respect. In many, especially in those following gastric ulcer, the symptoms may very closely simulate, or indeed be indistinguishable from, this latter condition.

The pain occurring in duodenal ulcer may again be quite distinct from that seen in other lesions. It is generally the first symptom noticed. The age at which it commences is, however, no criterion. Moynihan's youngest case[38] was 19 months old, his oldest 73 years. Kuttner[34] has recorded two cases, one in a child 10 days old, and one at 4 years, both being females, and Finny[11] a case of perforation in a male child 2 months old.

The nature of the pain, which has been so clearly defined by Mayo Robson[33] and Moynihan[38] under the term "hunger pain," is now well recognized. The man, for the patient is usually a male—in Mayo Robson's series 86 per cent. were males—complains of pain coming on some two to three hours after food. It commences as a sense of discomfort in the upper abdomen which passes into a gnawing sensation, later giving way to definite pain. With the onset of pain Moynihan[41] has described a free gush of saliva, the swallowing of which is often associated with relief. At first it may be relieved by eructation of wind, later it becomes more severe, and then passes through to the back, to the right of the middle line. At times it may be so severe as to be indistinguishable from that of hepatic or biliary colic. The most characteristic fact, however, is that it is definitely relieved

by food, so that the time immediately after meals is the most comfortable time of the patient's day. It may wake the patient up at night, so that many develop the habit of taking food to bed with them or carrying something in their pockets. It is relieved by alkalis as well as by taking food. As already mentioned, in cases of gastric ulcer where the ulcer is close to the pylorus, the pain may also not appear until some time after food, and thus the diagnosis be difficult. Kemp[23] goes so far as to state that one cannot distinguish between ulcers proximal and those distal to the pylorus. Recent statistics have shown also that duodenal ulcer is as common as, or even more common than, gastric ulcer. C. W. Mayo[32] found in his last 1,000 cases 401 (64.5 per cent.) duodenal, and 201 (32.5 per cent.) gastric, while in 19 (3 per cent.) both viscera were affected. Moynihan[38] in his first 114 cases found 40 per cent. associated with gastric ulcers.

Even more marked than in the case of gastric ulcer is the periodicity of the pain. At the onset of the disease it may last two, three, or four days, and be followed by complete relief for three, six, or even twelve months. In the later stages the attacks of pain become longer, and the intervals of freedom shorter, but it is only in the very late stages that it becomes constant. The attacks may be brought on by an indiscretion in diet, or even by exposure to wet or cold.

Gall stones, while they are still confined to the gall bladder and unassociated with complications, will, as Moynihan[37] and Mayo Robson[34] were the first to point out, give symptoms which are mainly referred to the stomach. Two distinct types of pain may be present which, as I have previously pointed out,[56] seem to depend upon the presence or absence of chronic cholecystitis. In the first group the pain is localized to the epigastrium and right hypochondrium. Soon or immediately after taking food there is a sense of fullness in the epigastrium and a feeling as of having eaten too much. It is often associated with flatulence, the feeling of distension being relieved when the clothes are loosened. The sense of distension may later be replaced by a dull aching or gnawing pain which in many cases varies with the nature of the food taken. This symptom was present as the first indication in 45 per cent. of the 400 cases of gall stones I have previously reviewed.[56]

In the second group of cases, where some chronic inflammatory condition is generally present, the pain is more severe. It is constant, but subject to severe exacerbations after meals. There are attacks of pain in the right hypochondrium and epigastrium, radiating from here to the back and shoulder. Although the pain is severe it is usually bearable, and thus differs from the agonizing pain of true colic. Like the pain of gastric and duodenal ulcer there is a well-marked periodicity, the attacks of pain lasting, perhaps, for a week or fortnight, during which there is but little relief. During such attacks the pain may be worse at night, and thus, from the point of view of this symptom alone, duodenal ulcer may be closely simulated. In severe cases, indeed, the two conditions may occur together. Moynihan[38] states that of the 114 cases of duodenal ulcer he had reported up to 1907, 7 cases had gall stones as well. In other cases the pain may be most marked in the right iliac fossa, so that appendicitis may be simulated; in fact, at times both conditions may be present (Ochsner,[45] MacCarty and McGrath.[28]

Of late years much evidence has been brought forward to show that there is a very close relationship between appendicitis and gastric lesions. Moynihan[42] first showed that in many cases of dyspepsia in which a lesion of the stomach, duodenum, or gall bladder might have been supposed to have been present none could be found, but on further investigation a lesion of the appendix was noted. He gave a full account of the symptoms, and showed how they closely resembled those of gastric ulcer, but how in many cases the condition could be distinguished. Fenwick[10] shortly afterwards described the presence of gastric hypersecretion in cases of appendicitis. Of 112 cases of such hypersecretion, the fault was in the appendix in 31. He goes on to state that an ulcer of the stomach may actually follow, the steps being as follows: A hypersecretion due to the appendix is the mildest form of the complaint (in acute conditions of the appendix the gastric juice is usually increased in quantity and acidity); the continuous flow of this hyperacid gastric juice is likely to incite an inflammatory change in the stomach, and be followed by an actual ulcer of the stomach or duodenum. At the same meeting Paterson[48] published the results of his investigations, which had been commenced before Moynihan's work was published. He operated in all upon 24 cases of appendicitis, 20 of which were females. In 15 of them a diagnosis of gastric or duodenal ulcer was made before operation. He gave the name of "appendix dyspepsia" to the symptoms which occurred. In a later publication[47] he showed that there was obvious appendicular disease in 66 per cent. of cases in which duodenal ulcer was present at operation, suggesting that appendicitis was one of the causes of duodenal ulcer as well as of gastric ulcer. Moynihan,[44] in his latest paper, shows the marked frequency with which the appendix is diseased in cases of duodenal ulcer, it being affected 12 times out of 14 consecutive cases. He states that in no case of duodenal or gastric ulcer should the appendix be left unexamined. I have myself shown[56] that there is very strong evidence that, in the majority of cases, gall stones are dependent upon a chronic *B. coli* infection which obtains admission by the intestinal canal. There is, therefore, every reason to believe that appendicitis may not only closely simulate one of the other lesions, but may actually be the cause of them. I shall describe later how the mimicry may even be carried further by the presence of haematemesis in appendicitis.

The pain may commence in the epigastrium shortly after food. In some cases it is rather a severe continuous discomfort than actual pain. In many it may radiate to the right iliac fossa and pressure here may increase the epigastric discomfort. Rarely does the pain radiate elsewhere in the abdomen. It is associated often with eructations, and although made worse by food, rarely shows complete relief between meals. In many cases the symptoms may date from childhood, and although in some they follow an acute illness suggestive of acute appendicitis, in others the onset is insidious. The symptoms often appear in definite attacks, lasting one to two weeks, but there is rarely complete recovery between, as with duodenal or gastric ulcers.

Appetite.

Variations in the appetite in these lesions are common, and seem to depend largely upon the changes in the secretion of hydrochloric acid. It must always be remembered, however, that they may be of two distinct varieties. In the first case the patient may take but little food owing to the fact that pain is thereby produced. In the second there is actual loss of appetite often amounting to repugnance for food.

In cases of gastric ulcer the appetite is very rarely reduced. The patient will, however, note that the ingestion of larger quantities of more indigestible food is followed by an increase of his pain. The general statement is, however, that he could eat anything, but is frightened to do so owing to this fear of the production of pain. With the presence of carcinoma, however, and possibly owing to the resulting decrease in the amount of hydrochloric acid present in the stomach, the appetite fails and the patient notices a gradually increasing distaste for food. This loss of appetite is, as would be expected, most marked towards meat foods, but is present for other solids in nearly as marked a degree. It is generally an early symptom, and thus, if it develop in a case which has shown a history of previous attacks, probably due to chronic gastric ulcer, suspicion should at once be aroused that the condition has now become carcinomatous. It is in such cases, however, that the appetite is most likely to remain good with the onset of carcinoma.

In cases of duodenal ulcer the appetite is good and is, in fact, better than normal. In addition to the actual condition of the appetite, there is the fact that the patient soon realizes that the ingestion of food relieves his pain, so that food may be taken in larger quantities on that account.

With gall stones and appendicular dyspepsia there may be little or no alteration in the appetite beyond the limitation of food brought about by the fact that pain is caused. At other times there may be distinct loss of appetite, whilst in others, again, it seems to be better than normal.

and associated with true hunger pain. These changes are probably dependent upon the fact that the amount of free HCl seems to be very variable. Thus Paterson[48] found in 17 cases, hyperchlorhydria in 2, and marked hypochlorhydria in 9.

Haematemesis and Melaena.

The nature of the loss of blood in any of these lesions is never sufficiently characteristic to make the diagnosis absolute. In cases of gastric ulcer the amount of blood lost may be very variable. On the one hand it may be so small in quantity as only to be found on minute examination of the stomach contents, whilst in others a severe or even fatal haemorrhage may be the first evidence of anything amiss with the stomach. More commonly there are attacks of free haemorrhage which last but a short time and are relatively quickly recovered from. Previously the presence of haematemesis associated with pain and vomiting was regarded as almost pathognomonic of gastric ulcer, but of late considerable evidence has been brought forward to show that all these symptoms may be present with no definite ulcer. Hale White[14] gave an account of 29 cases of haematemesis, of which 27 were females and 2 males, on whom a careful *post-mortem* examination had been made, but in no case was there any evidence of an ulcer. Similar cases were reported by Herringham[17] and Lejars.[25] Hale White has given the name "gastrostaxis" to this condition. In the majority of cases the difficulty arises in the diagnosis of acute gastric ulcers, which are rather of medical than of surgical importance; but in many the symptoms have lasted for so long a time that a diagnosis of a chronic ulcer is most likely to be arrived at. Sir Frederic Eve[8] reports 12 cases of such haemorrhage, where at operation with careful search of the interior of the stomach no trace of any ulcer could be found. In one of these cases the symptoms had lasted for twenty years, and in another for twelve years. In only three cases was the history of less than two years' duration. Bolton,[3] however, disputes the above findings, and states that in all cases an ulcer can be found if special precautions are taken on examining the stomach after death. Hale White,[16] in answer to this, quoted cases in which the evidence of the absence of an ulcer seemed to be very strong, and I think that it must undoubtedly be accepted that well-marked haemorrhage can occur from the stomach wall without any definite ulcer being present.

With cases of carcinoma the haematemesis is more likely to be slight in quantity, but constant, so that each vomit will contain a small amount of altered blood, giving the well-known coffee-ground appearance. In many other cases there may be no trace of blood in the stomach contents even if vomiting be frequent, as occurs when the growth is situated near the pylorus. In a smaller number the amount of blood lost may be large in quantity, and not only may a severe haematemesis occur, but altered blood be present in the stools. In a few of such cases with no previous history of chronic ulcer the first symptom may be a severe haematemesis, perhaps one or one and a half pints of blood being brought up.

The haemorrhage with duodenal ulcer may again be very variable. Moynihan[38] states that in a few cases it is the only, or at least the chief, symptom. There are attacks of faintness followed by anaemia, an examination of the stools then showing the presence of blood. It must be understood, however, that such cases are very unusual. He found in his 114 cases, which he at that date reported, 42 of haemorrhage, in 15 of which it was the urgent cause of operation. If it does occur it is a more serious matter and is much more likely to be fatal than a similar symptom with gastric ulcer. Both he and Mayo Robson[38] have pointed out the serious results of such a condition, and have laid stress upon the fact that under no circumstances must it be waited for in order to arrive at a diagnosis. If cases of occult haemorrhage—that is, haemorrhage that is only discovered by chemical or microscopic examination—are included the percentage is much higher. Moynihan,[44] in his latest paper on the subject, states that it was present in 50 per cent. of his cases, and Kemp[23] found it in 7 of his 10 cases.

Owing to the position of the ulcer, blood is more likely to pass down the intestine than back into the stomach, and therefore to be found in the stools in an altered state. If it be relatively large in amount the stools would have the characteristic tarry appearance. It is a matter of very considerable interest that in many cases of gall stones and appendicitis, although the lesion is so remote from the stomach and duodenum haematemesis may be present. I have already shown how in many cases this may be due to the fact that these conditions may be associated with chronic gastric ulcer. In many others there is, however, but little evidence of any ulcer clinically, although at operation or *post-mortem* examination erosions and acute ulcers may be found. In some cases the condition has been noted before operation. Paterson,[48] in his 24 cases, found haematemesis in 5. In one the stomach at operation was found in the condition which has been described as weeping blood. McWilliams[29] has reported a case of severe and fatal haemorrhage after an operation for acute appendicitis, and quotes Schwalbach[52]—who collected 30 such cases, 17 of which were fatal—as stating that the condition was dependent upon haemorrhages, erosions, and ulcerations in the stomach and duodenum. J. Hutchinson[20] reported a fatal case following an operation for gall stones, and quoted the figures of the cases which I had previously collected from the London Hospital in the three years 1907 to 1909 inclusive. There were 24 cases of haematemesis dying after operation, 13 of which were of appendicitis. Of the others 6 showed some septic condition. In addition to these there were 16 medical cases in which acute ulcers were found *post mortem*, 13 of them having been admitted and treated for some septic lesion. That is to say, that of the 40 cases some septic lesion was present in 80 per cent., and appendicitis in about 32.5 per cent. MacCarty and McGrath[28] showed in a similar way that of the cases of gall stones in which the appendix was removed, 59 in all, 69 per cent. showed inflammatory lesions of the appendix. Spencer[54] also pointed out how haematemesis was dependent upon sepsis, especially intra-abdominal. With these figures and the evidence I have previously mentioned there can be no doubt that duodenal and gastric ulcers as well as gall stones are largely dependent upon some septic infection which in a large proportion of cases is situated in the appendix, and is probably due to the *Bacillus coli*.

Vomiting.

Vomiting with any of the above lesions is extremely variable, and apart from the presence of blood is of no aid in arriving at a differential diagnosis. In many cases its presence is dependent not so much upon the actual disease as upon the mechanical change brought about by the presence of that disease. Thus, in a large number of cases of chronic gastric ulcer there may be no actual vomiting, although eructation and regurgitation of acid material may be present. In other cases vomiting will occur with the attacks at the height of the pain, this latter being thereby immediately relieved. If there be any constriction of the stomach, either in the body in the form of an hour-glass deformity or at the pylorus, vomiting of large quantities of decomposing and fermenting material may take place, the amount which is returned and the frequency depending upon the amount of dilatation proximal to the obstruction. With carcinoma, again, the character of the vomiting will depend upon the presence or absence of obstruction of the gastric outlet. If there be no such obstruction there is early flatulence and regurgitation of bitter and foul material, while later actual vomiting occurs. In either case it may be associated with slight haematemesis. The amount of vomited material is generally small, and it is important to note that the act is not, as a rule, followed by relief, as in the case of a chronic gastric ulcer. If obstruction of the pylorus be present the characteristic type of vomiting found with a dilated stomach will occur early and not differ from that taking place when the obstruction is due to gastric ulcer.

With duodenal ulcer vomiting is rare; and although this is to be expected, it is a point which is insufficiently recognized. My own experience has been that vomiting occurring with a case showing otherwise typical symptoms of a duodenal ulcer, points to the presence of a gastric ulcer, gall stones, or chronic appendicitis as an addition to the duodenal ulcer. Moynihan[38] laid special stress upon the variety of vomiting in this lesion, and showed that it was only a constant symptom if stenosis of the duodenum had supervened from constriction of the ulcer.

When gall stones are present and are giving rise to the

more severe type of pain, vomiting is common. It then occurs at the height of the pain, and is followed by relief. This relief, although definite, is not generally so marked as in the case of chronic ulcer.

With chronic appendix gastralgia vomiting is frequent, and is often the most marked symptom. As is to be expected, it is most evident during the exacerbations of the symptoms, but may even be present between the attacks.

It will be seen that in many cases it is possible to arrive at a diagnosis from a careful consideration of the previous history, but there are so many exceptions to the common types that it is impossible to diagnose any one of the lesions with absolute certainty from this aspect alone. Certain further evidence can be gained from a careful examination of the patient.

In most cases anaemia is present. With chronic ulcer this may be due to the loss of blood or to the underlying toxaemia, for it is a noticeable fact that it is often marked in those cases where there has never been any visible loss of blood. Rutimeyer[50] found that the haemoglobin was reduced in 82 per cent. of his 200 cases. This is of interest, for the diagnosis between anaemia and gastric ulcer is thereby made less easy. In a similar manner, anaemia may be present with chronic duodenal ulcer, gall stones, appendicitis, or carcinoma of the stomach. And although it may be possible to recognize a distinction in the appearance of a patient suffering from haemorrhagic anaemia and that of one with an anaemia due to toxic absorption, too much stress cannot be laid upon it.

Emaciation and cachexia are likewise useless as a means of diagnosis. In carcinoma they appear late, and they may be present with chronic gastric ulcer. The ordinary methods of palpation, percussion, and auscultation give evidence of very limited value. In cases of gastric and duodenal ulcer there may be an area of deep tenderness of limited extent, and the position of such an area of tenderness may aid in making a differential diagnosis between the two. Again, with chronic cholecystitis there is generally deep tenderness over the gall bladder, which may be best shown by the presence of Murphy's sign. The enlarged gall bladder or a tumour of the stomach may be easily palpable. These last two symptoms are, however, often absent, and, in fact, the presence of a palpable tumour in the stomach points to the disease being far advanced although not necessarily inoperable.

If the stomach is distended and hypertrophied it may be felt or actually seen if the abdominal walls are thin, and active peristalsis may be visible as waves passing from left to right. In the majority of cases, however, there is absolutely nothing to be ascertained by palpation or inspection.

Hertz[18] has shown that the methods of percussion and auscultatory percussion are useless to determine either the size or the position of the stomach. This is, indeed, what one would expect when one considers that even if distended the stomach may contain solids and no gas, and my own experience is in complete accord with this statement of his. Radiography of the stomach and duodenum after administration of a bismuth meal may, however, be of considerable value, but here again it must be realized that there is considerable difficulty in interpreting the results aright. Cunningham[6] and Birmingham[2] showed by anatomical studies that the usual shape of the stomach was not that of a simple sac, as was previously believed, but that it was divided into a cardiac part, which was more or less saccular, and a tubular pyloric portion separated at the incisura angularis. These observations have been supported by Cannon and Blake[4] and by Pfahler[40] by means of *x*-ray photographs taken after a bismuth meal. They have also been very fully investigated and supported by Gray,[12 13] who has shown that food is retained in the saccular portion for an appreciable interval; and, although Barclay[1] has thrown doubt upon them, there is no doubt that such a division must be recognized in the normal stomach. With an atonic and distended stomach the division may be lost. Care, therefore, must be taken not to mistake a normal stomach for one with an hour-glass deformity. As regards the condition of the duodenum, there appears to be divergence of opinion. Jordan[21 22] has described a condition of obstruction of the duodenal outlet which may be followed by duodenal ulcer, if it is not indeed always present with it. Moynihan[44] has, however, for the last two years examined all his cases of duodenal ulcer by this method, and finds that the food shoots rapidly through this portion of the intestine. There is, in fact, the very reverse of any delay or obstruction, but in a few cases the local arrest of the bismuth has led to a correct diagnosis of a pouch caused by the irregular contraction of an ulcer.

In every case of doubt a test meal should be given, as support may thereby be given to one or other of the possible diagnoses. As regards the value of the results, Willcox[57] states that the active hydrochloric acid is nearly always increased with gastric and duodenal ulcer, whilst it is markedly diminished with gastric carcinoma. Tidy and Panton,[46] from their exhaustive analysis of 331 cases, find a diminution of free HCl with carcinoma unless there is a previous history of ulcer, whilst with chronic ulcer alone there is on the average a slight increase, but with duodenal ulcer the increase is much more definite. There are, however, many exceptions to the above facts, and, as Sherren[51] has shown, too much stress must not be attached to the test meal. He has found in his series that, "in those cases in which most help is needed . . . namely, those with many years' history, which may be chronic ulcer or may have overstepped the line and become malignant, no information is given of any value." He has, moreover, reported several cases in which the condition verified at operation and by microscopic examination was directly contrary to what the test meal would have led one to expect. This method, therefore, must be regarded only as a valuable aid to diagnosis, and not as a certain means of deciding it.

Of the methods of direct vision I shall say but little. Of the ultimate value of the ingenious instrument invented and described by Souttar,[53] and the later one described by Hill,[19] which has the advantage of being passed in its whole length by direct vision, it is too early as yet to speak with any certainty. With both an admirable view of the gastric mucosa can be obtained; but, although with both the pylorus can be viewed, the stomach alone can be investigated, and those conditions which I have been describing, and which may so closely simulate stomach lesions, will pass entirely unnoticed. Moreover, the two stomach lesions which are so difficult to distinguish are chronic ulcer and gastric carcinoma, and not uncommonly it is impossible to recognize them with the naked eye, even when the diseased areas are fully exposed, the diagnosis resting upon the feel or even upon the microscopic examination. It must be remembered also that in most cases the passage of these instruments necessitates the administration of a general anaesthetic, and since, in careful hands, the sole danger to-day of an exploratory operation is the small one of the anaesthetic, the patient will thereby be exposed to the same risk in return for much less information.

The final and most certain method of diagnosis is that of exploratory laparotomy. It must be understood, however, that in all the above lesions the only satisfactory treatment is an operative one, and thus laparotomy is not performed for the purpose of making a diagnosis alone. It is the first step in the operative treatment. I have attempted to show how in the majority of cases a careful investigation will lead to the diagnosis of the presence of one of the above lesions. In a certain number the actual nature of the lesion is also clear, but there are a few cases in which one can say with certainty that one of the lesions is present, but it is impossible to say which. This is the type of case in which exploratory operation is desirable, or rather operative treatment is still demanded, but the exact nature of the operation can only be determined after the abdomen is opened. It is rarely that a true exploratory operation is done, and nothing is more to be deprecated than a tendency to slur over the clinical investigation on the plea that all will be made clear at operation. In the greater number of cases a certain diagnosis can be made. For the remainder it is all the more essential that a careful examination be made in order that further knowledge be gained, so that even they may be separated one from another.

What, then, are the indications for operation? It must always be borne in mind that the most important is the possibility, even if remote, of carcinoma being present. This in the early stages is quite capable of cure, but if left

is certain to become inoperable. It is in this stage that diagnosis is difficult. W. J. Mayo[33] states that "gastric cancer itself does not give rise to diagnostic symptoms during the curable stage." The other lesions are, however, not only so intractable to any other form of treatment and are so readily relieved by surgical measures, but if left are so likely to be associated later with severe or fatal complications that valuable time should not be lost. I would regard, then, the indications for operative treatment as follows:

1. Any case where the symptoms are such that one of the above lesions can be diagnosed with tolerable certainty.
2. Any case commencing after the age of 35, which is not markedly relieved by a few weeks' adequate medical treatment.
3. Any case where symptoms have recurred after previous attacks relieved by medical treatment, especially if the symptoms have changed from those typical of a chronic gastric ulcer.
4. Any case in which the stomach shows definite evidence of distension, whether the symptoms are those of ulcer or carcinoma.
5. Any case in which a tumour is present suggesting any of the above conditions.
6. Any case with repeated haemorrhage.

I would lay special stress upon the fact that if rapid progress is not made with adequate medical treatment operation should early be resorted to. With our present knowledge it affords the only certain method of diagnosis and cure, and if undertaken early many of the more hopeless complications can be entirely prevented. Also in cases of this nature no operation must be considered complete unless the stomach, duodenum, gall bladder, and appendix have all been examined.

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A CONGENITAL DEFORMITY OF THE FOREARM AND ITS OPERATIVE TREATMENT.

BY

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DERBY.

The deformity which is the subject of this article has never, as far as I am aware, been described in any English textbook or journal; indeed it is doubtful whether the condition has ever received recognition at the hands of modern surgeons. I have, however, been told that it has been described in America, but I have not been able, so far, to obtain any more exact information concerning it. I think, therefore, that the case which has come under my care should be reported as fully as possible, together with a description of the operative treatment which has been followed out.

The patient is a lady, aged about 33, and the deformity a congenital one, consisting of fixation of the forearms in a position of complete pronation with some slight bowing of the radius in its lower third, the convexity of the bow being backwards and outwards (presuming the limb to be in the correct anatomical position, palms to the front and thumbs out). The condition affects both arms equally, causing very great limitation to the usefulness of the arms and hands. The carpal bones are unusually movable one upon the other, and the ligamentous attachments uniting them are very lax, this allowing of a certain amount of rotation of the hand on the forearm, much more than is normally the case, and is doubtless due to constant efforts at supination acting on the only part of the limb capable of any rotatory movement. The deformity is not very noticeable when anything is taken in the hands, and no effort at supination is attempted; but if an effort is made to hold anything with the palm turned uppermost, a most awkward exposure of the deformity results, the elbow being pressed firmly to the side, and the hand rotated into an almost spiral attitude. A younger brother is also the subject of the same deformity, both right and left arms being perfectly fixed in the position of pronation, with even more marked bowing of the radius and more laxity of the intercarpal ligaments, and their maternal grandmother also suffered from the same condition, although it was not supposed to be so extreme, thus showing the strong hereditary tendency such bony deformities have. Some radiographs here reproduced as engravings show the fixation to be due to bony union between the radius and ulna extending from the elbow downwards along the shafts for about 2½ in.; the two bones are quite free below at the inferior radio-ulnar articulation, the space between them being seen quite distinctly on the fluorescent screen, though the bones were very close together and the joint cavity very small. The head of the radius, instead of being the normal mushroom shape, was rounded off and laterally fused with the ulna. On considering operative treatment the question naturally arose that, supposing the bones were completely separated, could the movements of supination and pronation be effected by means of the usual supinating and pronating muscles? The biceps flexor cubiti was the only supinating muscle that had hitherto been functionally active, the others might have become completely atrophied owing to their never having been used. On careful examination the supinator longus and pronator radii teres muscles could be made out, though they appeared much smaller and thinner than normal, and during the operations which followed this was found to be the case, the former being very poorly developed, both the muscle and tendon thin and weak. The pronator radii teres was also very weak and its tendinous insertion into the radius was as thin as paper.

Treatment and Progress.

However, operation was decided upon, and the first step was to remove the bridge of bone uniting radius to ulna; this was done through a curved incision at the back of the arm just below the elbow, the attachments of the extensor muscles being separated as far as the posterior border of the ulna. No

trace of supinator brevis muscle was seen, in fact, the place normally occupied by this muscle was completely filled with bone, neither was anything seen of the posterior interosseous nerve, which normally pierces the supinator brevis between its humeral and ulnar heads of origin; it was probably pushed aside with the mass of extensor muscles arising from the external condyle of the humerus. The bridge of bone removed with hammer and chisel was about 2½ in. long, ½ in. thick, and ⅜ in. deep. The head of the radius was very irregular in shape and two or three bosses of bone were removed. Forcible rotatory movements were made, and some tendinous attachments or adhesions snapped in the region of the wrist, the hand moving round towards supination through some 70°–90°. A piece of muscle was stitched in between the raw bony surfaces, the capsular ligaments and deep fascia drawn together with a purse-string suture of catgut, and the wound closed.

Numbness of the hand was complained of, but it passed off in three or four days. Passive movements were made from the fourth day, slight at first but increasing daily, and at the end of a month considerable improvement had taken place from the original condition, and it was possible to rotate the radius on the ulna through about 25°. The

Fig. 1.

Fig. 2.

Figs. 1 and 2.—Right arm, showing bony union at upper ends of radius and ulna.

movement, however, came to a sudden stop, as if some tight ligamentous band was put on the stretch. This was thought to be at the inferior radio-ulnar joint. The anterior and posterior ligaments comprising the greater part of the capsular ligament are normally very lax and sufficiently long to allow of extended movement of the radius round the outer aspect of the head of the ulna; this movement never having taken place it was thought the ligaments had become contracted and tight.

The second operation (four weeks after the first) consisted of freeing the head of the ulna through a curved incision on the dorsum of the wrist, cutting all the ligamentous attachments and removing two or three small redundant bosses of bone. This operation, however, afforded little or no improvement, and following it a considerable amount of oedema of the hand developed, owing, no doubt, to the cutting of subcutaneous lymph channels when the skin incision was made. This took two or three weeks to clear up. Troublesome stiffness of the fingers also followed, but massage, fango mud baths, radiant heat baths, elastic compression, passive movements, and breaking of adhesions under chloroform has gradually restored them to an almost normal condition. The same treatment has also been applied to the forearm, and some stiffness in the elbow-joint soon got quite right again.

The third operation (eleven months after the second) consisted of division of the interosseous membrane and oblique ligament from top to bottom through a straight incision down the flexor surface of the forearm. The interosseous membrane was not very definite, and consisted of isolated bands of fibrous tissue strongest near the top and bottom. This was followed by some further improvement, the total amount of true rotation being about 30°. It was then decided to excise the head of the radius, and three months after the previous operation the arm was attacked through an incision just below the elbow as in the first operation. It was found then that some slight bony reunion had taken place between the cut surfaces of radius and ulna where the original bridge of bone had been removed (see Fig. 4). The head was separated from the ulna and surrounding soft tissues, drawn out of the wound and sawn off obliquely from above downwards and inwards, leaving behind the greater part of the tuberosity, so as to save the insertion of the biceps muscle. A good-sized piece of muscular tissue was interposed between the bones and

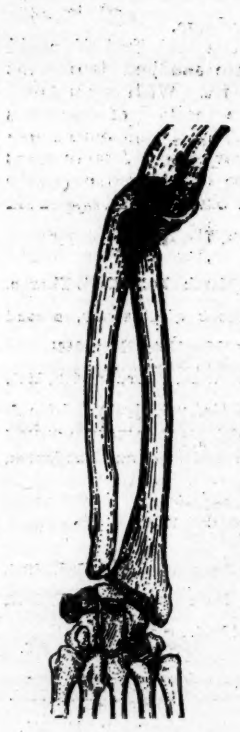

Fig. 3.

Fig. 4.

Figs. 3 and 4.—Left arm. Condition after the second operation.

fixed there with catgut sutures, the deep fascia united with catgut, and the wound closed.

This operation was very successful and increased the amount of rotation by quite 60 degrees so that after a further two or three months' exercises, massage, and passive movements the hand could be almost completely supinated with the help of some rotation at the shoulder-joint and adduction of the arm. The patient, however, was still not satisfied as the hand could not be made quite flat with palm uppermost owing to the bowing of the radius throwing the radial side of the wrist forwards, and urged me to consider still further treatment. The only thing that appeared feasible was to perform an osteotomy of the radius and rotate the lower fragment on the upper one. This was done in November last, an incision being made 7 in. long over the inner border of the supinator longus muscle; this was defined and separated out and the insertion of the pronator quadratus and all other muscular and ligamentous attachments separated from the lower two-thirds of the radius excepting the insertion of the pronator radii teres, the tendon of which was very thin and lax and did not in any way limit free movement. The bone was then sawn through transversely at the junction of the middle and lower thirds, the

lower fragment rotated through about 40 degrees and secured in position by means of a plate and screws. The arm was put up supinated and kept in splints for a month, and the result at the date of writing has quite justified the procedure adopted. Supination can now be easily accomplished, and though the movement is somewhat cramped, it should improve greatly as the muscles strengthen and adhesions still further disappear. Massage, passive and active movements, are being continued, together with such exercises as screw-driving, digging in the garden, and piano playing. It is probable that the right arm will be treated in due course, when, in view of the experience gained in operating on the left, the time of treatment will be considerably shortened, the first and fourth operations will be done together, the third and fifth together and the second only done at the last if the result demands it. One lesson to be learnt is to do too much, rather than too little, since the parts contract up, just as in ordinary joint excisions.

ON THE INFLUENCE OF METEOROLOGICAL CONDITIONS ON THE DEVELOPMENT OF TRYPANOSOMA RHODESIENSE IN GLOSSINA MORSITANS.

BY

ALLAN KINGHORN AND WARRINGTON YORKE,

NGOA, NORTHERN RHODESIA.

(Fifth Interim Report of the Luangwa Sleeping-sickness Commission of the British South Africa Company.)

In a former report[1] attention was drawn to certain points which seemed to indicate that meteorological conditions in the Luangwa Valley had a considerable influence on the development of *Trypanosoma rhodesiense* in *Glossina morsitans*. As, however, the experiments were few in number, and were carried out during only a single dry and wet season, no definite conclusions could be drawn. Since the Commission established its head quarters on the Congo-Zambesi watershed, evidence has accumulated which indicates decisively that such conditions, more particularly the temperature, exert a very pronounced influence on the development of the trypanosome in *Glossina morsitans*.

At Nawalia eight transmission experiments were made—four with laboratory-bred and four with "wild" *Glossina morsitans*. At Ngoa five experiments have been carried out to date—four with "wild" and one with bred flies. It is unfortunate that the bred flies are not more numerous, but owing to the low temperature the majority of the flies did not emerge from the puparia, and many of those which did were malformed and quickly died. In all the experiments in which "wild" flies were used, however, the possibility that they were already infected with the trypanosome was excluded by first feeding them on healthy monkeys.

TABLE I.—*Meteorological Observations at Nawalia, N. Rhodesia, 12° 25′ S., 32° 2′ E., Altitude 2,100 ft. (approximately).*

1911-12.	External Shade Temperature: Mean.	Absolute Maximum.	Absolute Minimum.	Laboratory Temperature: Mean.	Relative Humidity: Per Cent.	Rainfall in Inches.	Days on which Rain Fell.
	°F.	°F.	°F.	°F			
June	67.2	89.0	44.3	—	48.6	0	
July	68.7	91.0	44.6	67.4	45.7	0	
August ...	73.3	96.8	51.2	71.2	35.8	0	
September ...	77.5	103.3	54.0	71.5	31.5	0	
October ...	85.1	107.6	62.3	81.5	31.8	0.26	2
November ...	87.1	107.8	67.9	84.6	41.1	1.61	8
December ...	82.3	101.7	67.8	79.6	69.1	8.54	20
January ...	80.6	101.1	67.0	78.4	77.7	14.97	16
February ...	79.2	96.0	65.1	77.1	73.8	5.55	16
March... ...	79.0	97.6	61.0	72.0	52.5	3.10	6
April (to 9th)...	79.5	97.9	59.8	77.2	58.0	0.01	1
						36.04	69

TABLE II.—*Meteorological Observations at Ngoa, N. Rhodesia, 11° 40′ S., 31° 30′ E., Altitude 4,400 ft. (approximately).*

1912.	External Shade Temperature: Mean.	Absolute Maximum.	Absolute Minimum.	Laboratory Temperature: Mean.	Relative Humidity: Per Cent.	Rainfall in Inches.	Days on which Rain Fell.
	°F.	°F.	°F.	°F.			
April (20-30) ...	72.0	89.7	54.1	68.0	53.7	0	
May	69.0	90.5	45.1	66.2	51.3	0	
June	61.5	85.5	34.3	60.5	53.0	0.01	1
July	62.4	83.0	42.3	60.9	53.0	0	
						0.01	1

The details of the Nawalia experiments have already been published,[2] while those of the Ngoa series will appear in a later report. For the purposes of the present paper synopses of the two series will suffice, and will be found in Tables III and IV.

TABLE III.—*Synopsis of Transmission Experiments with Trypanosoma rhodesiense and Glossina morsitans, carried out at Nawlia, Northern Rhodesia.*

No.	Date on which Started.	Season.	Number of Flies Used.	Variety of Flies Used.	Result.	Duration of Developmental Cycle: Days.	Mean Temperature during Developmental Cycle.*	Absolute Maximum during Developmental Cycle.	Absolute Minimum during Developmental Cycle.	Relative Humidity* per Cent.
							°F.	°F.	°F.	
1	Aug. 20, 1911	Dry	26	Bred	Infection	13	75.1	90.0	60.5	35.0
2	Nov. 14, 1911	Commencement of rains	16	,,	,,	15	83.5	93.5	74.5	44.8
3	Nov. 14, 1911	,,	57	Wild	,,	11	83.8	93.5	74.5	44.8
4	Dec. 29, 1911	Rainy	20	Bred	Negative	—	78.2	87.1	72.8	74.5
5	Jan. 12, 1912	,,	42	Wild	,,	—	78.0	85.7	72.8	74.2
6	Jan. 12, 1912	,,	42	,,	,,	—	78.0	85.7	72.8	74.2
7	Jan. 12, 1912	,,	23	Bred	Infection	19	77.9	85.7	72.8	75.4
8	Feb. 13, 1912	,,	104	Wild	,,	25	77.3	86.0	71.0	66.5

*In the case of the unsuccessful experiments the mean temperature and the relative humidity have been calculated for the first thirty days only.

TABLE IV.—*Synopsis of Transmission Experiments with Trypanosoma rhodesiense and Glossina morsitans carried out at Ngoa, Northern Rhodesia.*

No.	Date on which Started.	Season.	Number of Flies Used.	Variety of Flies Used.	Result.	Duration of Developmental Cycle: Days.	Mean Temperature during Developmental Cycle.	Absolute Maximum during Developmental Cycle.	Absolute Minimum during Developmental Cycle.	Relative Humidity, per Cent.
							°F.	°F.	°F.	
1	May 18, 1912	Dry	116	Wild	Negative	—	62 7	74.5	50.5	52.0
2	June 13, 1912	,,	90	,,	,,	—	59.1	72.4	42.0	52.0
3	June 14, 1912	,,	119	,,	,,	—	59.1	72.4	42.0	52.0
4	June 26, 1912	,,	19	Bred	,,	—	60.2	71.8	42.0	52.0
5	July 11, 1912	,,	176	Wild	,,	—	62.0	72.0	49.1	50.0

It will be seen from these tables that whereas, in the Luangwa Valley, *Trypanosoma rhodesiense* was successfully transmitted by *Glossina morsitans*, all efforts in this direction on the Congo-Zambesi watershed have so far been in vain. Of 330 flies used in the valley experiments, 6 and probably 10 became infective. The larger figure is based on the number of salivary gland infections found in the flies. Our experience indicates that the implication of these structures is intimately connected with the ability of *Glossina morsitans* to transmit *Trypanosoma rhodesiense*, and that until they are invaded by the organisms the flies are non infective. Salivary gland infections have been found in all the flies which were capable of transmitting the parasite. In experiment No. 3 (Table III) six flies were found to harbour trypanosomes in the glands, but of these only two were actually proved to transmit *Trypanosoma rhodesiense*. As in all other instances it was shown conclusively that those flies in which trypanosomes were found in the salivary glands were infective, it may be concluded that the remaining four flies in this experiment were also capable of transmitting the parasite. Invasion of the salivary glands has not been observed, except in those flies which were known to transmit *Trypanosoma rhodesiense*. In the five plateau experiments, 520 *Glossina morsitans* were employed without a single fly becoming infective.

The explanation of these apparently contradictory results is at first sight not very obvious, more particularly in view of the fact that even on the plateau "wild" *Glossina morsitans* capable of infecting healthy monkeys with *Trypanosoma rhodesiense* were occasionally encountered. If the climatic conditions under which the valley experiments were carried out be compared with those obtaining during the plateau experiments, it will be seen at once that the most striking difference is one of temperature. As a rule, the temperature during the former series of experiments was roughly from 15° to 20° F. higher than during the latter series.

With a view to ascertaining the influence, if any, exerted by temperature on the developmental cycle of *Trypanosoma rhodesiense* in the tsetse fly, a further series of experiments were performed on the plateau, in which, by means of an incubator, the flies were kept at a temperature approximating to that of the valley at the most favourable season.

TABLE V.—*Synopsis of Experiments to Transmit Trypanosoma rhodesiense by Means of Glossina morsitans kept in Incubator.*

No.	Date on which Started.	Season.	Number of Flies Used.	Variety of Flies Used.	Result.	Duration of Developmental Cycle: Days.	Mean Temperature during Developmental Cycle.	Absolute Maximum during Developmental Cycle.	Absolute Minimum during Develomental Cycle.	Relative Humidity, per Cent.
							°F.	°F.	°F.	
1	June 30, 1912	Dry	61	Wild	Infection	14	80 6	87.8	74.5	36.0*
2	July 1, 1912	,,	72	,,	,,	13	80.6	87.8	74.5	36.0*

* Approximate.

No water was placed in the incubator, and the warm, dry air was found to have a very deleterious effect on the insects. Within the first seven days 25 of the 61 flies with which experiment No. 1 was commenced, and 53 of the 72 in experiment No. 2 had died. Notwithstanding the small number alive at the end of the second week at least one infective fly was obtained in each experiment.

It seems obvious, therefore, that a high temperature favours the development of the trypanosome in *Glossina morsitans*, and that the comparatively low temperatures obtaining during May, June, and July, on the Congo-Zambesi watershed are very unfavourable to the completion of the developmental cycle of *Trypanosoma rhodesiense* in this fly, and would account for the unsuccessful experiments at laboratory temperatures.

Other observations afford corroborative evidence in support of this contention. An analysis of the valley transmission experiments shows that the largest number of infective flies was obtained at the hottest season of the year.

TABLE VI.—*Showing Number of Infective Flies Obtained, and Meteorological Observations at Nawalia (Luangwa Valley).*

Number.	Date on which Started.	Season.	Duration of Developmental Cycle: Days.	Number of Infective Flies Found	Mean Temperature during Developmental Cycle.	Absolute Maximum during Developmental Cycle.	Absolute Minimum during Developmental Cycle.	Relative Humidity, per Cent.
					°F.	°F.	°F.	
1	Aug. 20th, 1911	Dry	13	1	75.1	90.0	60.5	35.0
2	Nov. 14th, 1911	Commencement of rains	15	1	83.5	93.5	74.5	41 8
3	,, ,,	,,	11	6	83.8	93.5	74.5	44.8
4	Dec. 29th, 1911	Rainy	—	0	78 2	87 1	72.8	74.5
5	Jan. 12th, 1912	,,	—	0	78.0	85.7	72.8	74.2
6	,, ,,	,,	—	0	78.0	85.7	72.8	74.2
7	,, ,,	,,	19	1	77.9	85.7	72 8	75.4
8	Feb. 13th, 1912	,,	25	1	77.3	85 0	71.0	66.5

The fact that an occasional infective "wild" fly was encountered on the plateau during a period (May, June, and July) when attempts to transmit in the laboratory were invariably unsuccessful requires some explanation. A possible solution may be that the flies in question were infected during the warmer season of the year and had survived into the cold season.

If the results obtained by feeding freshly caught flies on healthy monkeys in the valley are compared with those from flies caught on the plateau, a marked difference in the number of infections resulting is apparent. In the Luangwa Valley 3,202 flies were fed in 29 batches, and *Trypanosoma rhodesiense* was isolated in six of the experiments, giving a ratio of 1 infective fly to 534, whereas on the Congo-Zambesi watershed 5,041 freshly caught *Glossina morsitans* were fed in groups on 39 monkeys, with

4 positive results—1 infective fly to 1,260. As tsetse flies and game are about equally numerous at Nawalia and Ngoa, and as the disease was presumably introduced into the two localities, which are less than 70 miles apart, about the same time, it appears to us that the only essential difference which can account for the fact that the percentage of infective "wild" flies at Nawalia is two and a half times as great as at Ngoa is the difference in the climatic conditions. It will be seen from Tables I and II that the temperatures experienced on the Congo-Zambesi watershed during May, June, and July are very much lower than those at Nawalia from September to March. It was during the months named that our experiments were carried out at the two places.

Finally, it might be mentioned that the percentage of infective "wild" flies caught in the valley was greater in the hot than in the cold season. This point is illustrated in Table VII.

Table VII.—*Percentage of Glossina morsitans found Infected with Trypanosoma rhodesiense at Nawalia at Different Seasons of the Year.*

1911-1912.	Mean External Shade Temperature.	Number of Flies Fed.	Number Infectious with *T. rhodesiense*.	Ratio Infective to Non-Infective Flies.
June	67.2°	18	0	0 : 790
July	68.7°	385	0	
August	73.3°	193	0	
September ...	77.5°	194	0	
October	86.1°	—	—	1 : 338
November ...	87.1°	270	1	
December ...	82.3°	205	0	
January	80.6°	538	2	
February ...	79.2°	104	0	1 : 466
March	79.0°	823	2	
April (to 9th)	79.5°	472	1	

In addition to temperature, there is one other factor in the climatic conditions which may possibly influence the developmental cycle of the trypanosome in *Glossina morsitans*. We refer to the relative humidity of the atmosphere. At the most favourable season of the year in the Luangwa Valley for transmission experiments, and also in the case of those carried out in the incubator, the relative humidity was extremely low. Whether this is a mere coincidence we are, at present, unable to form an opinion, but hope to be able to write more definitely on the subject in a later communication.

Summary.

The developmental cycle of *Trypanosoma rhodesiense* in *Glossina morsitans* is, to a marked degree, influenced by the temperature to which the flies are subjected. High temperatures (75–85° F.) favour the development of the parasite, whilst low temperatures (60–70° F.) are unfavourable.

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The ninth International Physiological Congress will be held at Groningen in September (2nd to 6th), 1913.

Under the title, Vienna Roentgen Courses, an association of all the best known radiologists in Vienna, has been formed on the initiative of Herr Keinz Bauer (Engineer), Docent Dr. Holzknecht, and Docent Dr. Kienböck. It is proposed to organize every year a course extending over ten to twelve days, and covering the whole ground of radiology, theoretical and practical. Among the lecturers who have so far consented to take part in the courses are Messrs. Bauer (Berlin), Freund, Haudek, Holzknecht, Kienböck, Robinsohn, Schüller, and Schwartz (Vienna). The first course will be given in the spring of 1913.

THE ETIOLOGY AND TREATMENT OF MINER'S NYSTAGMUS.

WITH A REVIEW OF 100 CASES.

BY

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The subject of miner's nystagmus as an industrial affection touches the interests of both employer and employee.

The conclusions formed by us as to the causes, predisposing or otherwise, and the treatment, prophylactic as well as curative, have been arrived at by an unbiassed and independent consideration of 100 consecutive cases as they presented themselves to us.

The factors contributing to the production of nystagmus in miners are not numerous, and, arranged in order of relative frequency and importance, are: (1) Inadequate light, (2) errors of refraction, (3) straining of ocular muscles, (4) neurotic temperament.

1. *Inadequate Light.*—That this is an important cause of miner's nystagmus is conclusively proved by the fact that 99 per cent. of our cases had been using the lock-lamp for a number of years. Only one case was found where the naked light was allowed, and here the nystagmus was accounted for by hypermetropia, much straining of the ocular muscles in narrow seams, and a markedly neurotic temperament with much physical debility.

The lock-lamp must be 9 ft. from the farthest point of the mandril, and so the workman is staring into comparative darkness, whereas the naked light is attached to the workman's cap or to a post close beside. Therefore, the naked light not only gives a much brighter and stronger light because it is exposed, but also because the workman has its full benefit. We have also had experience of miners in various parts of Scotland, where the naked light is used, and in these districts miner's nystagmus is practically unknown.

2. *Errors of Refraction.*—An examination of the summary of cases of miner's nystagmus seen by us will show that 90 per cent. had errors of refraction, excluding the three cases in which there was evidence of error, but owing to marked photophobia no exact estimate could be made; while 7 per cent. had normal refraction. Of the 90 per cent., 48 per cent. had either myopic, hypermetropic, or mixed astigmatism; 27 per cent. had simple hypermetropia; and 15 per cent. had simple myopia. It is interesting to note that a large number of the cases of hypermetropia were those of comparatively young men who had worked only a few years at coal-cutting.

3. *Straining of the Extrinsic Muscles of the Eyeball.*—This is the result of the two foregoing factors. In all our cases the workman had his eyes fixed in a staring, strained position for long periods, either downwards and laterally, as in narrow seams, or upwards, as in wide seams; 90 per cent. of our cases were engaged cutting coal, while 10 per cent. were hauliers and timbermen, and one a colliery examiner.

4. *Neurotic Temperament.*—The inability, on the part of a very large number of men with nystagmus, to concentrate their physical or mental powers in any particular line of action guides us to the conclusion that such instability is probably much more the cause than the effect of nystagmus. It most certainly appears to be a weak point in the miner's armour, and would repay careful examination long before the stage of inability to work.

The severe headaches and aching eyes of which these men complain are accounted for by errors of refraction and straining of the eyes; the vertigo, by inco-ordination of the ocular muscles; the conjunctivitis and photophobia by the sudden frequent change from darkness into dazzling light.

Prevention.

This resolves itself into medical examination of all men engaged to work underground, and the periodical examination of all underground workers, for (*a*) the presence of refraction errors, (*b*) any signs of incipient nystagmus, (*c*) physical or nervous debility.

To this must be added the importance of adequate light.

Age.	Occupation.	Years Underground.	Refraction.	Oscillation.	Remarks.
43	Miner	Over 30 years	Photophobia so marked that refraction examination was impossible	Marked	Vertigo very marked.
48	Miner	36 years	+0.75 D. sph. in both eyes	Marked	Nictitation and photophobia.
36	Miner	24 years	R.−1 D. cyl. horiz. L.−0.75 D. sph.	Slight	Photophobia.
27	Miner	14 years	R.+1 D. L.−2.5 D. sphs.	Marked	Vertigo and photophobia.
24	Miner	10 years	R.−2 D. L.−2.75 D. sphs.	Marked	—
56	Miner	40 years	R.=Normal. L.+0.50 D. sph.	Slight	—
29	Miner	16 years	R.−0.50 D. L.−1.50 D. sphs.	Marked	Vertigo frequently.
37	Miner	20 years	R.+0.75 D. L.+1.25 D. sphs.	Marked	Photophobia.
19	Miner	5 years	−2.50 D. horiz. cyl. in both eyes	Marked	—
22	Miner	8 years	R. 1.25 D. sph. / −2.75 D. horiz. cyl. L.+1.25 D. sph. / −2 D. cyl. axis 120°	Marked	Photophobia and conjunctivitis.
29	Miner	3 years	R.−0.50 horiz. cyl. L.=Normal	Marked	Vertigo.
39	Miner	27 years	R.+0.75 D. L.+1 D. sphs.	Marked	Photophobia and frequent headaches.
46	Miner	30 years	R.+2 D. L.+2.75 D. sphs.	Marked	—
21	Miner	9 years	Simple hypermetropia +6 D. in both eyes	Rotatory	Vertigo.
30	Miner	18 years	Hypermetropic astigmatism in both eyes	Very slight	Nictitation and vertigo.
46	Miner	30 years	Impossible, owing to photophobia	Very marked	—
23	Miner	11 years	R.+2.5 vert. cyl. L.+0.50 D. sph.	Rotatory	Severe headaches.
35	Miner	8 on coal, 4 timberman	Hypermetropic astigmatism in both eyes	Very slight	Vertigo and aching of eyes.
28	Miner	13 years	R.+1.5 D. sph. L.+1 D. vert. cyl.	Marked	—
41	Miner	10 years	R.+10 D. sph. L.+10 D. sph.; 2 D. cyl.	Marked	Nictitation and headache.
43	Miner	30 years	Oblique myopic astigmatism −1 D. in both eyes	Marked	—
39	Miner	20 years	R.=Normal. L.+4 D. sph.	Marked rotatory	Has been a haulier for last 10 years.
50	Haulier ...	40 years	R.−1 D. sph. / −0.50 D. cyl. horiz. L.−1.50 D. sph. / −0.50 D. cyl. horiz.	Marked	Headache and photophobia.
45	Miner	34 years	Mixed astigmatism in both eyes	Not marked	Nictitation and vertigo.
19	Miner	5 years	Simple hypermetropia in both eyes	Marked	—
21	Miner	9 years	Normal	Marked	Photophobia.
38	Miner	20 years	R.=Normal. L.+2.5 D. sph.	Marked	—
55	Miner	40 years	Astigmatism (low degree)	Slight	—
21	Miner	8 years	R.+4 D. sph. L. oblique hypermetropic astigmatism, marked	Marked rotatory	Some photophobia.
32	Timberman ...	12 years	Oblique hypermetropic astigmatism	Marked	—
48	Miner	28 years	+2 D. sph. in each eye	Slight	Vertigo and photophobia.
35	Miner	22 years	+1.50 D. sphs. (both eyes)	Marked	Photophobia.
24	Miner	12 years	R.−3 D. cyl. horiz. L.−1.50 D. sph.	Marked	—
37	Miner	20 years	+1 D. hypermetropic astigmatism (both eyes)	Marked rotatory	—
30	Miner	15 years	R.−0.75 D. L.−1 D. sphs.	Slight	Severe headaches.
30	Miner	12 years	R.−1.25 D. L.−1 D. sphs.	Marked	Vertigo and photophobia.
48	Miner	30 years	R.+2 D. L.+2.5 D. sphs.	Slight	Photophobia.
67	Miner all his life	—	Simple myopia, well marked	Marked	Complains of giddiness.
40	Miner	20 years	R.+0.75 D. sph. L.+0.50 D. sph.	Slight	—
43	Miner	25 years	R.+0.75 D. vert. cyl. L.+0.50 D. vert. cyl.	Rotatory	Marked headache and vertigo.
39	Miner	10 years	R.+1.25 D. L.+0.50 D. sphs.	Marked	Photophobia.
33	Miner	20 years	Simple myopia. −3 D. in both eyes	Rotatory	Photophobia.
23	Labourer ...	11 months	R.+4 D. vert. cyl. L.+4.50 D. vert. cyl.	Slight	Photophobia.
43	Miner	25 years	R.+0.25 D. sph. L.+0.50 D. vert. cyl.	Slight	Headaches and vertigo.
26	Miner	8 on coal, 1 labouring	R.+0.50 D. sph. / −3 D. horiz. cyl. L.+0.50 D. sph. / −1 D. horiz. cyl.	Marked	No nystagmus when left coal cutting.
24	Miner	11 years	R.−0.75 D. cyl. axis 120°. L.−0.5 D. sph	Marked	Marked quivering of eyelids.
38	Miner	25 years	R.+0.75 D. vert. cyl. L.+1 D. vert. cyl.	Marked	Marked photophobia
21	Miner	8 years	R.+1 D. cyl. axis 75°. L.+0.75 cyl. axis vert.	Slight	Vertigo occasionally.
52	Colliery examiner	15 years previously on coal	Slight hypermetropia in both eyes +0.50 D.	Marked	Pain in eyeballs and vertigo.
45	Timberman ...	20 years coal; timberman 10 years	R.+0.75 D. horiz. cyl. L.+1.25 D. sph. / −2.25 D. horiz. cyl.	Not marked	Conjunctivitis and photophobia.

Age.	Occupation.	Years Underground.	Refraction.	Oscillation.	Remarks.
35	Miner	Coal 20 years	R.−1 D. horiz. cyl. L.−6 D. sph.	Slight	—
36	Miner	Over 20 years	Oblique myopic astigmatism	Marked	Quivering of eyelids and headache.
20	Miner	5 years	Hypermetropic astigmatism +1 D. in both eyes	Marked on stooping	Frequent headaches.
34	Miner	17 years	R.+2 D. horiz. cyl. L.+2.50 horiz. cyl.	Fine oscillation	Worked as timberman for past 10 months.
35	Miner	Over 20 years	Simple myopia. R.−3.5 D. L.−3 D.	Marked	Very marked when in stooping position.
34	Miner	20 years	Simple hypermetropia. R.+2 D. L.+4 D.	Marked	Frequent attacks of giddiness.
44	Miner	33 years	R.−1.50 D. sph. L−2.50 D. sph.	Slight	Vertigo.
18	Miner	2 years	R.−2.75 D. sph. −1.75 D. horiz. cyl. L.−5.50 D. sph. −3.50 D. horiz. cyl.	Slight	Vertigo. (Has worn glasses for some time.)
41	Miner	29 years	Refraction normal	Marked rotatory	—
34	Miner	25 years	R.−2.50 cyl. L.+0.50 sph. C.−3 D. cyl.	Very marked	—
27	Miner	13 years	R. Myopic astigmatism. L. Hypermetropic astigmatism (both of low degree)	Fine oscillation	Marked photophobia and vertigo.
22	Miner	10 years	R.+7 D. L.+6.50 D. sphs.	Rotatory	Photophobia and conjunctivitis.
29	Miner	17 years	No refraction error	Marked	Conjunctivitis.
45	Miner	38 years	R.+2.5 D. L.+2 D. sphs.	Marked	Worked last seven years with naked light.
51	Miner	40 years	R. and L.+0.50 sphs.	Marked	—
18	Miner	5 years	Mixed astigmatism in both eyes	Marked	Vertigo.
52	Miner	30 years	R. and L.+2 D. sphs.	Marked	Conjunctivitis and photophobia.
33	Miner	20 years	R. and L.+1.5 D. sphs.	Slight	Marked photophobia.
25	Miner	11 years	R.−6 D. sphs. L.−7 D. sphs.	Slight	Marked photophobia and quivering eyelids.
40	Haulier ...	25 years on coal, 5 years haulier	Unable to complete refraction examination owing to patient becoming sick	Rotatory	Headache and vertigo frequent.
38	Miner	15 years	R. hypermetropic astigmatism vertical. L. hypermetropic oblique	Slight	Vertigo marked.
33	Miner	22 years	Hypermetropic astigmatism in both eyes	Rotatory	—
47	Miner	30 years	Hypermetropia in both eyes	Marked on stooping	Nictitation.
23	Miner	8 years	Oblique hypermetropic astigmatism in both eyes	Oblique	Photophobia.
35	Miner	17 years	R.−0.50 D. L.−1.50 D. sphs.	Slight	Nictitation and photophobia.
24	Miner	10 years	R.+0.50 D. with slight myopic astigmatism. L. refraction normal	Rotatory	—
25	Miner	13 years	+0.75 D. sphs. in both eyes	Slight	Marked photophobia.
38	Miner	26 years	R.−1.5 D. L.−2 D. sphs.	Marked	—
41	Miner	27 years	−1.75 D. sphs. R. and L.	Marked	Nictitation, vertigo, and conjunctivitis.
25	Miner	12 years	Refraction normal	Slight	Severe headaches.
24	Miner	12 years	R.−2 D. cyl. horiz. L.−2 D. cyl. axis 120°	Slight	Marked nictitation.
53	Miner	40 years	R. and L.+0.50 vert. cyls.	Slight	Headache and vertigo.
39	Miner	27 years	Myopic astigmatism in both eyes	Marked	Retinoscopy almost impossible because of photophobia.
18	Miner	5 years	Normal	Slight	Nictitation and photophobia.
21	Miner	6 years	Simple hypermetropia in both eyes	Slight	Photophobia.
32	Miner	10 years	R.+1.5 D. sph. L +1 D. obliq. cyl.	Slight	Marked conjunctivitis.
27	Miner	7 years	Oblique hypermetropic astigmatism in both eyes	Marked	Severe headaches with photophobia.
34	Timberman ...	20 years	Simple myopia in both eyes	Marked	Severe headaches.
22	Miner	8 years	Normal	Slight	Vertigo.
38	Miner	20 years	R.+1.5 D. sph. L.+1 D. sph.+1.5 D. cyl.	Marked	Headache and photophobia.
41	Miner	25 years	Simple hypermetropia in both eyes	Marked	Conjunctivitis, marked.
34	Driver	8 years	R and L.+0.50, oblique astigmatism	Marked rotatory	—
35	Miner	23 years	Slight hypermetropic astigmatism	Rotatory	Headache and vertigo.
46	Miner	30 years	+1.4 D. sphs. in both eyes	Rotatory	Marked vertigo and photophobia.
49	Miner	40 years	R.−1 D. cyl., axis 120°. L.−0.75 D. cyl. axis 60°	Slight	—
21	Miner	6 years	No error	Fine oscillation	Photophobia and nictitation
40	Miner	24 years	R−0.75 D. L.−1.25 D. Oblique cylinders	Rotatory	—
50	Miner	40 years	R.+6 D. L+4 D., with slight oblique hypermetropic astigmatism in both eyes	Marked	Photophobia.
46	Miner	28 years	R.+1 D. horiz. cyl. L.+1 D. obliq. cyl.	Marked	Marked twitching of eyelids.
25	Miner	12 years	R.=Normal. L.−1 D.	Marked	Photophobia.

In this connexion it appears surprising that even in the most up-to-date collieries there is, as yet, no indication of electric light being used throughout the workings. We are satisfied that if such precautions were taken and electric light installed in all working places in collieries, or electric lamps capable of giving light for at least eight hours supplied to all underground workers, miner's nystagmus would soon be unknown, while serious accidents to workmen and consequent loss to employer would much more rarely occur.

Treatment.

The curative treatment may be summed up in a single sentence, "Rest, strychnine, and the correction of refraction errors."

Conclusions.

1. There are certain important contributory factors in the production of miner's nystagmus, such as inadequate light, refractive errors, and muscular strain.

2. Nystagmus is a menace to the miner working underground, as it may prevent the early detection of flaws in the roof and falls result. An illustration of the gravity of this danger is the fact that one of our cases was a colliery examiner.

3. We are convinced that the preventive and remedial measures suggested would, if carried out thoroughly, soon make miner's nystagmus a very rare complaint, and greatly facilitate the detection of the small blue cap which indicates the presence of fire-damp.

ANEURYSM OF THE ANTERIOR CUSP OF THE MITRAL VALVE IN A CASE OF STAPHYLOCOCCAL ENDOCARDITIS.

BY

WILLIAM CALWELL, M.D.,

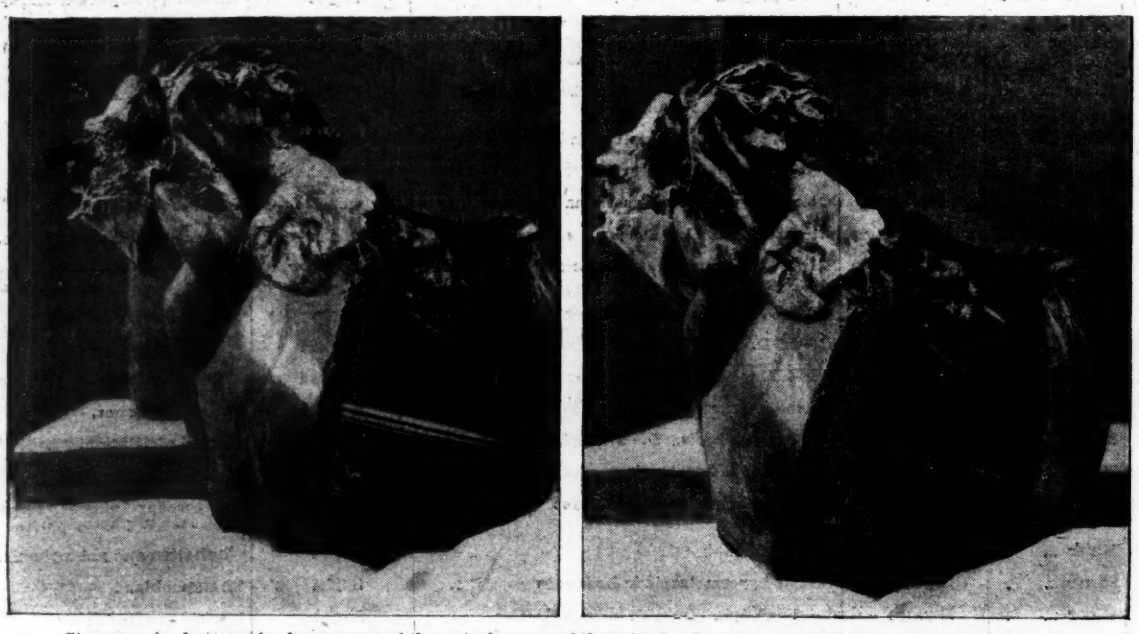
PHYSICIAN TO THE ROYAL VICTORIA HOSPITAL, BELFAST.

T. L., aged 16 years, was admitted under me into the hospital on April 8th, 1912. He was an apprentice fitter, and stated that he had always been of good health till the onset of the present affection. There was no history of rheumatic fever. Six weeks before admission he complained of headache, palpitation, sickness, and pain in the infrasternal notch, and he was compelled to stop work.

On admission he looked pale and thin; his teeth were good, the tongue was furred, but otherwise the alimentary system was normal. There were fine and medium râles at the base of both lungs. The urine showed some phosphates, no albumen, and no sugar. The left ventricle was hypertrophied, and a systolic thrill was felt over the mitral area; there was some difference of opinion as to the presence of a presystolic thrill; a loud, blowing murmur was heard over the precordial area generally, perhaps loudest towards the base, but also conducted round into the left axilla; it masked or replaced the first sound in the mitral area. A diastolic murmur of feeble intensity, but of the ordinary character, was heard along the sternum and also in the mitral area, where its character was indefinite and rumbling; this murmur was diagnosed as a "Flint's." The pulse was regular, soft, and varied between 84 and 132; it was generally between 112 and 120. The temperature was 99° to 100° F. in the morning, 101° and 102° in the evening. The blood count a few days after admission gave 3,000,000 red and 14,000 white, haemoglobin 60 per cent., thus giving an index of 1.

Suspecting an infective endocarditis, I drew off 8 oz. of blood from a vein and obtained a pure culture of staphylococcus in broth, and from this in agar. Dr. Wilson, Queen's University, kindly made me a vaccine, and on April 24th I gave the patient 20 million; this upset him and was evidently too large, but he seemed somewhat better on the third day after the vaccine; the improvement was not continued. A week later I gave him 10 million; this slightly upset him, and again there seemed a slight improvement. However, after the lapse of another week, when I was considering the advisability of a third dose, the embarrassment of the heart became more marked, the temperature fell, the pulse rose, his weakness increased, and he died on May 11th.

Post-mortem Examination.—The heart was found hypertrophied and weighed 17 oz. It was opened by a sterilized knife and a minute piece of the vegetation from the mitral valve removed and planted in broth; a staphylococcus was grown, but the growth became contaminated by the *Bacillus subtilis*. An abscess was found in the upper part of the spleen, which gave a pure staphylococcal growth. The right side of the heart was normal; in the left there was stenosis and thickening of the semilunar valves; there was a small growth of vegetations on the auricular surface of the left or posterior flap of the mitral orifice; the anterior or septal presented a large aneurysmal sac ballooned back into the auricle, no doubt from the greater pressure in the ventricle; the orifice of this aneurysm on the ventricular aspect was large enough to admit the tip of the little finger; the cavity was partially filled with blood clot.



Stereoscopic photograph of aneurysm of the anterior cusp of the mitral valve in a case of staphylococcal endocarditis. (Taken by Messrs. Lizars.)

Several interesting problems are suggested. Could such hypertrophy take place in ten weeks in a lad poisoned with a staphylococcal toxin? Had there not evidently been some old-standing heart trouble? Again, the question of the entrance of the poison into the system is one of great difficulty and interest. Not very infrequently we meet with cases in which presumably a local infection becomes from some trivial cause generalized. Thus Dr. Henry of Belfast had treated a case of acne in a lad of about 20. He improved and relapsed. About a fortnight after the last dose of vaccine he fell while jumping, and two days afterwards developed pain in the region of the left hip. This condition got worse, and in a few days during which I saw him septicaemia set in, probably with endocarditis, which became intensified, and death ensued so rapidly that a full bacteriological examination of blood or spinal fluid could not be made. A *post-mortem* examination was not allowed. A somewhat similar result followed a slight wrench of the

elbow in a man subject for the previous year or so to boils.

The course in these cases might be compared to the breaking down of adhesions in a case of peritonitis, and the onset of a fulminant type of generalized peritonitis. But this lad gave no previous history throwing light on either onset or course. He may not have remembered or not have attached any importance to events which in the light of the subsequent catastrophe were of great moment. The case illustrates also the necessity for a much earlier diagnosis than is dreamt of at present. With such a valve, what vaccine could possibly have been of any service? In the future, the early examination of the blood by cultural methods may help in similar cases.

The use and the dosage of vaccines in these cases of septicaemia furnish another problem. One would think that the microbe circulating through all the tissues would stimulate them to respond more than a vaccine in one small spot. Again, the difference in dose between a few hundred million used in a case of acne or of boils and one million, the dose recommended to me by Dr. Houston of this city, after my second dose, is very remarkable.

Aneurysm of a valve is mentioned by most authorities, but the literature is not very full. I suppose there is not much to be said about it.

A CASE OF ULCERATIVE ENDOCARDITIS.

BY

A. HOULGRAVE, L.R.C.P.Lond., M.R.C.S.Eng.

I was sent for to see Miss ——, aged 55, towards the end of February.

She was in bed lying on her back, her head and shoulders supported by several pillows, her lower limbs drawn up, the soles of her feet resting on the bed. Her face was of an earthy, dusky hue, the alae of the nose were working, the lips apart, and the angles of the mouth drawn back. She complained of her throat, which she said pained her on the left side at the angle of the jaw, which was worse when she swallowed, and of a very acute pain at a spot on a line drawn from the tip of the tenth rib, which would meet the horizontal at a level of the umbilicus, and of acute pain in the metacarpal joint of the left thumb. The joint was swollen, red, hot and painful; pain much worse in movement. The temperature was 103°, the pulse 120, and the respirations 40. The tongue was moist, with a creamy brown fur; the fauces congested and swollen, left tonsil enlarged, white matter at the orifices of several of the crypts, no enlargement of lymphatic glands. The chest expanded well. The heart's apex by feeling and percussion was in the nipple line; systolic bruit at apex. No great enlargement of the right side, by percussion; no dullness above the third rib. A systolic murmur at second left intercostal space. First sound over aortic area not clear. No friction or thrill felt. Lungs and pleura nothing abnormal found front or back. Urine acid, no albumen, no sugar, specific gravity 1030, lithates. Over the spot indicated above in the abdomen she complained of great pain; the muscles, in that region especially, were tonically contracted, and prevented further examination.

Warmth was applied to the abdomen, the thumb was bathed in hot water and wrapped up in cotton-wool and bandaged. The throat was rinsed with warm salt and water, and swabbed with powdered boracic acid. This was done as often as the pain got worse. As to diet, she was ordered to have no milk curds, and nothing that would not go through a fine sieve, to be taken in small quantities, and not more than 2 oz. at a time; 1 grain of calomel was given followed by castor oil.

The symptoms gradually improved. Her blood was examined at the Pathological Laboratory of the University of Liverpool, with negative results.

In about a month she had a severe rigor, and it was followed by an attack of pleuropneumonia. She gradually got better of this and was sitting up. One day I found her sitting up in an armchair, leaning forward with her arms resting on the arms of the chair, gasping for breath. She had an ashy, earthy complexion, was bathed in a clammy perspiration, she could scarcely speak, and one could scarcely feel her pulse. The usual remedies were applied and she came round. This attack was followed by blocking of the right saphena vein. She was kept in bed with the limb bandaged and gradually got better, and then she had another rigor. This was followed by plugging of some vein in the lower third of the left calf of the leg. The same treatment was adopted, and she gradually came round.

Then one day she was out for a walk and sat on a seat. This was followed by chill and fever, but no local cause could be discovered.

By way of treatment, as soon as I felt pretty safe that there was not any acute intestinal inflammation, as appendicitis, etc., to deal with, she was given a mixture of 5 grains of quinine sulphate, 10 grains of salicine, and 5 minims of dilute sulphuric acid, three times a day, and occasionally 1 grain of calomel followed by castor oil, but the remedy was oxygen, given for ten to fifteen minutes every hour, about sixty to ninety bubbles coming through the water per minute. Her temperature varied from 103.5° the highest, to 96° the lowest. The chart was typical of pyaemia.

I am thankful to say she is now in her usual health.

The oxygen was made in a generator the same as is used in the French Army, and supplied by Messrs. Oppenhiemer and Son, London.

A CASE OF ABNORMAL PULSE RHYTHM.

BY

WILLIAM JOHNSTONE, M.B., Ch.B.Glas.

TRANENT.

The following case exemplifies rather an unusual condition and is of interest on account of the fact that the patient to all intents and purposes is a healthy man. He is aged 65 years, of robust build and regular habits, but inclined to be stout; he has always enjoyed good health, but was told when presenting himself for life insurance about thirty years ago that he had an "intermittent" pulse.

A tracing of his pulse taken with Dudgeon's sphygmograph showed a pulse partaking of the nature of a pulsus trigeminus but exhibiting a further abnormality. A long pause occurred after the three systoles and another full systole then occurred, followed by another fairly long pause, this in turn being succeeded by the trigeminal condition again.

The most unaccountable fact was that on our continuing our observations the pulse took on an apparently regular rhythm, as exemplified in the third tracing. The explanation of these phenomena is not very clear. The only answer which seems to me feasible is that the cause has to do with the nervous mechanism of the heart. I cannot find a similar condition recorded.

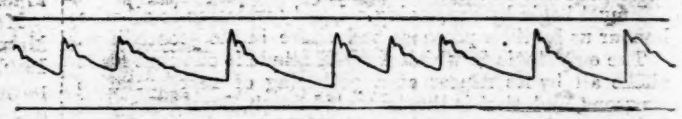


Fig. 1.

Mackenzie in his *Diseases of the Heart* (1908) has some tracings on page 143 which exhibit "extra" systoles after two, three, or four beats. But these extra-systoles are not of the same volume as the regular beats themselves, as the solitary beats are in this case with a long pause before and after.

Fig. 2.

The cardiac condition of the patient was good for a man of his years, and there was no evidence of arterio-sclerosis in the vessels, as far, at least, as could be determined by examination of the accessible arteries.

On taking his blood pressure, however, we found it to register 195 mm. Hg systolic and 120 mm. Hg diastolic, with a pulse-rate of 68.

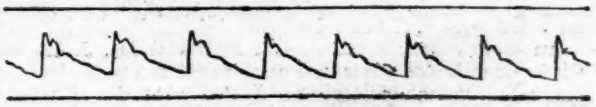


Fig. 3.

He has been put on a course of nitrites in order to determine whether the rather high blood pressure is of any etiological significance in eliciting the apparent vagary of the pulse rhythm.

The urine was examined and found normal. Dr. Thorne Thorne, in the British Medical Journal of June 12th,

p. 1363, draws attention to the fact that a sphygmographic pulse tracing is absolutely useless as a guide to arterial blood pressure. The tracings in this case with fairly high blood pressure would not, *per se*, suggest the figure which was determined to be the result by the use of the Riva-Rocci apparatus.

EIGHTIETH ANNUAL MEETING

OF THE

British Medical Association.

Held in Liverpool on July 19th, 20th, 22nd, 23rd, 24th, 25th, and 26th.

PROCEEDINGS OF SECTIONS.

SECTION OF SURGERY.

Professor RUSHTON PARKER, M.B., B.S., F.R.C.S., President.

PRESIDENT'S INTRODUCTORY REMARKS.

THE business of this Section is so varied and abundant that a formal introductory address would be a needless infliction. Moreover, as it would be against the expressed wish of the Association authorities, I gladly abstain from more than a few remarks.

I must begin by expressing a hearty welcome to all who honour us by their presence and share in the proceedings.

The only topic to which I shall allude is one that must strike all by its fitness at a gathering of representative surgeons, and that is the lamented death, during the past half-year, of our great master, Lord Lister, the teacher of all the surgical teachers of the world, whose memory has already received such tributes as the human race can pay, in every kind of journalistic notice, at the commemoration service in Westminster Abbey, and finally at the grave in London.

Those who came under his sway could never forget the influence produced upon themselves by his teaching and example; searching ideas and intelligent practice united to effect the brilliant simplification of our art. Of the numerous earlier witnesses as pupils and assistants in Glasgow, in the memorable years from 1865 onward, I content myself with mentioning two by name—Sir Hector Cameron and Sir William Macewen. The contributory writings of Sir Hector Cameron are an important part of antiseptic literature, and need no further allusion. It is gratifying to know that an address will be given by Sir William Macewen in the Anatomical Section on the development and growth of bone. Those who heard his address on the subject in the University of Liverpool in 1906 had the opportunity of learning at first hand the importance of his original work on this topic, first communicated to the Royal Society in 1881. The value of this work and the correction of previous ideas enabled me in 1907 to undertake and successfully accomplish the simplest, easiest, and least dangerous operation for ununited fracture, by planting in the interval small crumbs of bone clipped from adjacent callus, or, in the absence of callus, from the ends of the ununited bone.[1]

An early visitor to Glasgow in 1868 was Dr. J. Lucas-Championnière of Paris, one of the first and most devoted converts and supporters of Lister abroad. Grateful acknowledgement is here made of his article on the life and labours of Lord Lister in the *Journal de médecine et de chirurgie* of February 25th, 1912.

Not having myself been a witness of Lister's own practice until 1881 in London, I can still number myself with those at University College who read with avidity and discussed with profit his early papers on antiseptic surgery from 1867 onward and carried out his practice. His work on the early stages of inflammation was brought to the notice of myself and fellow students by Dr. Sharpey in 1866, but at that time I could not understand it. On preparing my own lectures on surgery in and after 1877, I found this work of essential value, with the reprints and personal advice freely sent to me by the author, who wrote in 1880 as follows:

> I have sometimes been tempted to think the work I did with regard to inflammation, etc., pretty much thrown away so far as any direct influence upon my professional brethren is concerned, although I am well aware that the knowledge which I gained in that way was of the utmost value to myself, not merely as enabling me to comprehend to some extent matters in surgical pathology which had before been mysterious, but also as affording the clue to the interpretation of the apparently conflicting facts with which I found myself confronted when I began to work at antiseptic surgery. Hence it was peculiarly welcome to me to receive testimony that those early papers have proved immediately useful to one engaged, like yourself, in the teaching of surgery.

What better guides to successful practice can be found than the two remarkable cases of his in the *Edinburgh Medical Journal* for April and August, 1858—one on spontaneous gangrene from arteritis, and the other on a case of ligature of the brachial artery, both illustrating the persistent vitality of the tissues? The knowledge obtained from the latter, many years after publication, enabled me hopefully to deal with a case of compound dislocation of the elbow with severed main artery and vein, and to obtain complete restoration of structure and function without defect.[2]

Most wonderful are his latest papers in the BRITISH MEDICAL JOURNAL for 1908. The paper published January 18th, p. 125, "On the preparation of catgut for surgical purposes," is a complete description of the simplest, quickest, and most durable preparation of catgut for all purposes, with perfect tests of its efficiency added. There is a valuable editorial note on the same (p. 163). On April 11th, p. 849, were published "Remarks on the treatment of fractures of the patella of long standing" (illustrated), and on June 27th, p. 1557, "Remarks on some points in the history of antiseptic surgery." This is a splendid epitome of the aims and methods of his antiseptic practice, in a space of less than two pages. With regard to the first and third of these I have ventured to say in comment:[3]

> If these two brief papers . . . were mounted and hung up in every hospital and medical school for repeated study by all engaged in surgery, they would serve an invaluable purpose by spreading and simplifying antiseptic precautions among all concerned, and not least among those who are chiefly likely to encounter "minor cases," for when these "go wrong" much "major surgery" may result.

On which he wrote to me as follows:

> April 27th, 1909.
>
> Your letter in last Saturday's BRITISH MEDICAL JOURNAL gratified me much. It will, I hope, do a great deal of good. . . .

I received from him on the catgut question several more letters, which, up to August, 1909, were in his own handwriting throughout; after that others, dictated and merely signed by him, up to October, 1911, four months before the end.

A word now about the arrangements of this Section, in the appointment of three set discussions instead of two. The Council were very desirous that the report of the special Committee on Fractures should be presented and discussed in the Section of Surgery at this annual meeting. If the officers of the Section had only known, before choosing the subjects for set discussion, the report of the Fractures Committee would have been selected as one. But the request did not reach us until invitations had been issued and accepted for the discussions, on carcinoma

[1] BRITISH MEDICAL JOURNAL, January 11th, 1913, p. 84; *Proc. Roy. Soc. of Med.*, June, 1908.

[2] *Lancet*, February 16th, 1884, p. 300.

[3] BRITISH MEDICAL JOURNAL, April 24th, 1909, p. 1036.

of the rectum and tuberculous disease of the urinary tract, between three and four months. We could not thrust aside either of these topics, so we have felt compelled to continue the work of the Section on Thursday afternoon. In compensation for this extra attendance, I should be inclined, were you a jury and I a judge, to grant you exemption from attendance at future meetings "for a season."

DISCUSSION ON THE SURGICAL TREATMENT OF RECTAL CANCER.

OPENING PAPER.

By Harrison Cripps, F.R.C.S.,
Consulting Surgeon to St. Bartholomew's Hospital.

As time is limited, it is unnecessary to enter at length into the history of the treatment of rectal cancer. The operation is comparatively modern and, for practical purposes, may be considered as first established by Lisfranc in his paper on the subject read before the Académie de Médecine in the middle of last century, while later the many successful operations of Dieffenbach, of Leipzig, and more recently the works of Marchant and Kraske on the Continent, and of Kelsey, Tuttle, and others in America, have all done much to improve the operation. British surgery, too, claims many names who have helped to establish the operation on its present basis. The first planned operation for excision of the rectum in this country was performed by Sir James Paget in 1878, and the specimen is now in St. Bartholomew's Hospital. Doubtless many of you will remember the paper read at Leeds at the meeting of this Association by one of the most eminent surgeons in the North, the late Mr. Jessop, who introduced the subject for a surgical discussion in 1889. Lately Mr. Swinford Edwards opened a discussion on rectal cancer in an interesting paper at the Royal Society of Medicine, to which Sir Frederic Eve and Mr. Miles and others added much valuable information, while the recent works of Mr. Lockhart Mummery and Mr. Handley have helped to elucidate this difficult subject. We must not forget the name of the late Mr. Herbert Allingham. Inguinal colotomy, now one of the most valuable operations, was never performed in this country until he helped to introduce it as an aid in the treatment of rectal cancer. The value of this operation can be estimated by the fact that it has entirely superseded the lumbar operation.

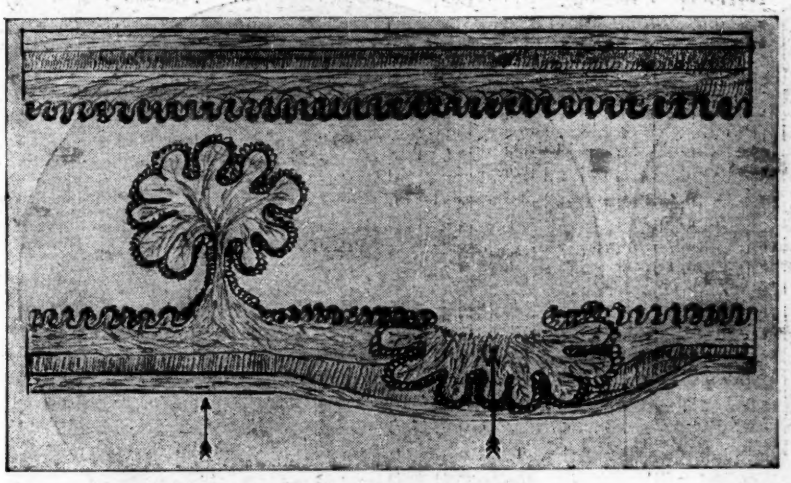


Fig. 1.—Section of bowel (diagrammatic).

Pathology.

I do not propose to encroach upon the time allowed by discussing at length the pathology of rectal cancer, except in so far as it bears directly on surgical treatment. From this point of view it is so important that it is impossible to neglect it. Out of many hundreds of cases under my observation, with the rarest exceptions, the growth has always been of one type—namely, adenoid cancer. This consists of an enormous hypertrophy of the columnar glands of the mucous membrane—that is, of Lieberkühn's follicles. In some instances the growth consists of perfectly developed gland tissue, both the individual epithelial cells, the retiform tissue, and the general arrangement being as clearly defined as in the normal mucous membrane (Figs. 2, 3, and 3A). The slower the growth the more perfect the development; the more rapid the growth, especially in a recurrence, the more vague and embryonic is the appearance (Figs. 4 and 10), yet its general plan, as a glandular structure, can always be recognized. Taking the physical appearances of these growths, although all adenoid in structure, they present at the two ends of the scale most marked differences, both in their appearance and clinical behaviour. The extreme on the one side is the papillomatous or villous growth, with its beautifully formed tree-like arrangement, growing free and unrestricted into the lumen of the bowel, increasing slowly in the course of years, not invading the submucous tissue, the lymphatics or glands, and never becoming disseminated about the body or threatening life, except, perhaps, from haemorrhage or obstruction. It is not malignant; this type of growth has a well-marked pedicle, sometimes short, sometimes many inches in length. It exhausts its activity in growing a mulberry-like head. This head is neither fragile nor hard, but has, as near as possible, the consistency of normal mucous membrane. It projects like a well-grown forest tree into the cavity of the bowel (Fig. 1). At the other end of the scale is the common form of flat growth, which, though starting in the surface mucous membrane, instead of growing upwards and free, extends horizontally and downwards, first into the submucous tissue, then into and between the muscular coats, through these into the peritoneal coat, and ultimately spreading into and destroying every tissue and structure in its line of progress (Fig. 1). In these cases the glands become infected, and it ultimately disseminates itself into the interior organs, and more especially the liver, and, to a certainty, destroys life with greater or less rapidity—a growth essentially malignant.

If a section be taken of one of these papillomatous growths through the centre of the stalk and head it shows a beautiful structure under a low magnifying power. There is a central stalk of fibrous tissue forming the trunk of the tree. This trunk soon commences to bifurcate, sending off main branches, which again, after many times subdividing, ultimately expand into a delicate retiform tissue. On the surface of this expanded retiform tissue is set a layer of large cylindrical epithelial cells. No matter how intricate the branches and their subdivisions, the ultimate surface is covered uniformly and continuously by this epithelial layer (Fig. 5). The constant folding of the leaves upon each other and the juxtaposition of neigh-

Fig. 2.—Section through surface in a case of multiple polypi.

louring branches makes the structure difficult to follow, owing to the intricate pattern produced. The structure is, however, really most simple. The leaves, though in contact with each other, do not seem to coalesce, always showing the same principle, namely, fibrous stalks expanding into the retiform tissue, forming a supporting framework for the layer of columnar epithelial cells. A fair comparison for one of these growths under a low power would be that afforded by a section through the head of an ordinary artichoke. It is only when growing free, with a stalk into the lumen of the gut, uninterfered with by the structures of the body, and with a clear space in which to develop, that this tree-like structure is attained. It only increases to a limited size, leads its own life, and does not interfere with the structures or life of its host. Now what is the difference in structure between these innocent pedunculated growths and the worst forms of malignant cancer? Except in position in which they grow, there is none. The innocent tumour appears to start from the apex of Lieberkühn's follicles and to grow upwards by branches. The malignant disease appears to start at the base of the follicles and to grow downwards by roots. In all malignant tumours that are fairly slow growing at the edges can be seen exactly the same structure as in the

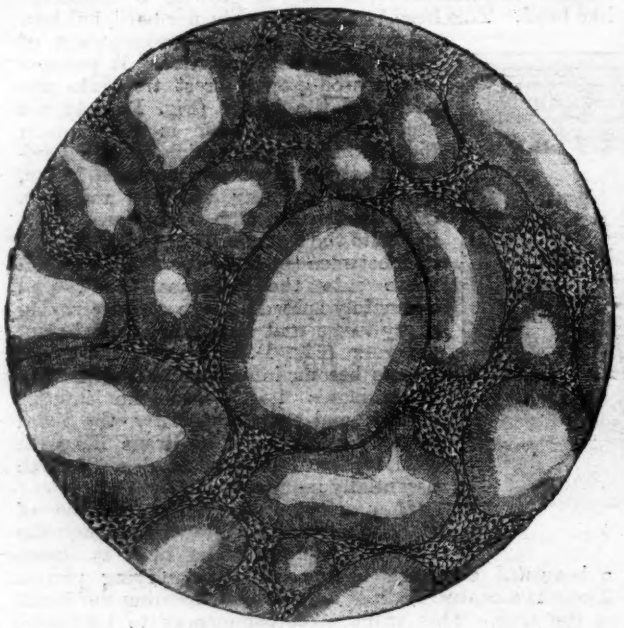


Fig. 3.—From a slow-growing adenoid tumour. The epithelial cells are very regular, and the intervening retiform tissue clearly marked. (Hartnack, obj. 4.)

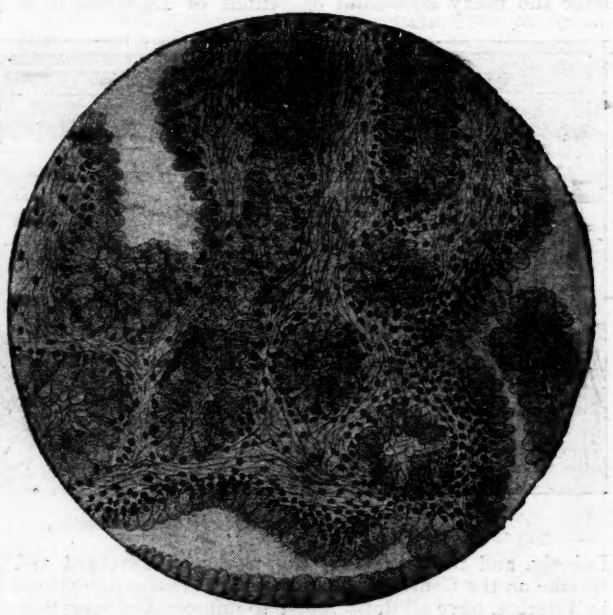


Fig. 3A.—Section near margin of growth, showing the supposed identity of the nuclei of the epithelium with the leucocytes of the retiform tissue.

papillomata, but the microscopic appearance is more complex. This is due to its growth by roots, for here it has to insinuate itself into and between the pre-existing normal structures of the intestinal coats (Fig. 6). It does this very irregularly, spreading along the lines of least resistance, first into the submucous tissue, then here and there growing through the muscular layers, again to spread horizontally in the intermuscular spaces (Fig. 9). It ultimately perforates all the coats, incorporating and absorbing every tissue in its line of progress. Some resist more than others, but its progress is irresistible and only stayed by the death of the patient. Owing to this growth into the normal tissues, much of it, as yet undestroyed, may be seen lying in and between the spreading adenoid growth, giving a most haphazard and ragged appearance to the section, so that only here and there can portions of the growth be detected amidst the normal tissues hypertrophied by irritation or necrosed by pressure. The view I have always advocated is that there is no difference in structure between the innocent papilloma and malignant disease, though more embryonic in one case than in the other, and I have published the history of some clinical cases showing how the one form of growth may pass into the other.[1]

The world of plant life is full of similar phenomena, the power to grow in either direction, upward towards the sky or downwards into the earth, as can be seen in a cutting from a plant. Cut off a growing shoot of a tree and stick it a few inches into a suitable soil, and in a short time it will take root, sending branches both upwards to light and downwards to moisture in the earth. These downward branches we call roots; histologically the root and the branch are the same structure, an epithelial surface spread upon a retiform or fibrous support. If such a section were taken of the roots of a plant and the ground in which they were growing, it would be most difficult to follow the continuity of the roots, for a great part of the section would not be plant at all, but the various structures appertaining to the ground into which it was extending. This is exactly what is seen in rectal cancer. The new growth can be clearly recognized here and there, but the section will be largely made up of layers of fibrous and muscular tissue which is no part of the growth, but merely the normal or damaged structures into which it was extending. At an early stage this can be clearly made out, though the normal tissues become necrosed and absorbed in process of time. I must not dwell here on the nature of the irritant that causes the epithelium of the intestine to construct this mass of adenoid tissue which we call cancer in the rectum. I would venture, however, to call to mind some specimens of gall tumour formation in oak and rose trees which I brought before the Pathological Society of London, and published in the thirty-fifth volume of their *Transactions*. These tumours were formed by the host—that is, the tree—and consisted of normal hypertrophied leaf structure, exactly as the cancerous tumour of the rectum is formed by the glandular epithelium of the follicles. In the oak and rose tree no amount of mechanical irritation will produce a gall. Similarly, there is no evidence that mechanical irritation will produce a cancer in the rectum. We know that in the oak the growth is due to a definite specific irritation—namely, the minute egg of the *Sineps quercus folii*, and the gall tumour forms a vegetable mass around it, to be eaten by the young Sineps when it is hatched. I have little doubt that science will in time discover a definite specific organism—that is, an infection from without the body—that produces these tumours in the rectum.

After this slight digression, whatever may be the exciting cause of the rectal tumour, let us get back to the way the growth in the rectum extends and spreads. It has already been stated that, should it develop from a pedicle free in the lumen of the bowel, it is not malignant, and need not now concern us. On the other hand, if it grows downwards between the muscular coats of the bowel, it is invariably malignant, gradually destroying and absorbing all the tissues in its path, ultimately infecting the glands and distant organs.

If a section is placed under the microscope and growth is seen between the muscular fibres in the rectal wall, such growth is, in my experience, invariably malignant (Figs. 6 and 7).

Rectal cancer is essentially local in its early stage, and the method of its extension has an important bearing on the question of operation. When once started, it spreads at first by continuity, more so horizontally than in depth. This appears due to there being less resistance between the layers of muscle than there is in the muscles themselves. In this way several square inches of the surface of the bowel are affected, while the whole thickness of the growth may for some time be less than half an inch. However, it eventually perforates into and through the muscular coats, and invades the tissues outside. Owing presumably to the interruption of the blood supply by the pressure of the increasing growth, the mucous membrane over it soon falls into a necrotic state and ulcerates, the greatest depth of the ulceration being in the older part of the growth. After ulceration is established, the disease advances along the bowel by a hard everted edge (Fig. 8), which generally ends very abruptly in sound mucous membrane. Lymphatic and glandular infection, in my experience, is quite a late stage of the disease, and thus affords the most hopeful prospect in operative treatment.

A. B.

Fig. 4.—A, From rapidly-growing recurrent cancer. The adenoid structure can be clearly traced, and is formed on the same plan as the slower growth in Fig. 6. The cavities are very irregular. The epithelial covering and the intervening retiform tissue are embryonic and ill defined. (Hartnack, obj. 4.) B, Same under higher power.

I must dwell a little longer upon this method of spreading. I do this on account of the recent researches of so eminent a pathologist as Mr. Sampson Handley. It will be remembered that Mr. Handley published two years ago in the British Medical Journal a paper with drawings taken from sections stained with muci-carmine, the object being to show how rectal cancer spreads along the submucous lymphatics for several inches or even feet beyond the original site without producing any tumour or hardness by which it could be detected. He further pointed out that it was in this spreading along the lymphatics parallel to the bowel that the explanation of recurrence was to be found, and from this he drew the inference that, for successful surgery, not only should the disease be removed, but long lengths of the bowel, amounting to inches or feet, should be cut away. I believe this view to be erroneous as bearing on the surgical treatment of rectal cancer. I have carefully studied his drawings, and cannot accept the view that, because cells in the lymphatics, feet away from the primary growth, stain a certain colour with muci-carmine, this is, as he states, a conclusive proof of cancerous invasion. I have spent too many years in the histological study of rectal cancer to place the same reliance that Mr. Handley does on the significance of such stained cells, or that they invariably indicate cancerous infection. Before this dogma can be established, countless test experiments and methods of staining, both in normal and diseased tissues, must be undertaken and corroborated by clinical experience. Clinical experience is entirely opposed to the deduction that such an early dissemination of rectal cancer along the submucous lymphatics is common or even usual. That recurrence unfortunately takes place in a large number of cases is true; but let us consider how this growth would manifest itself if Mr. Handley's view was correct. He endeavours to show that the lymphatics are infected for many inches beyond the apparent margin of disease. If this were so, it would be merely a question of time before the whole of the infected area became thickened and hardened with the usual manifestations of adenoid cancerous growth. Then by the time that this had developed, the disease would be still spreading ahead, and if the patient lived long enough, many feet, or even the whole intestinal tract would become involved. It would also show the uselessness of removing the growth locally with only an area of an inch or less of apparently sound margin; in fact, it would make any reasonable local removal quite hopeless; but both the conditions just mentioned are inconsistent with clinical facts in the great majority of cases.

It will be found that recurrence seldom takes place except at the extreme edge of the cut margin, and even this is exceptional, for in most cases recurrence is not in the remaining part of the bowel, but in the connective tissue and structures lying immediately external to the part removed. I have over and over again seen the recurrence in the neighbourhood of the ischio-rectal fossa and skin near the anus, while the bowel itself at the cut margin and along the whole of its course upwards remained entirely free from any visible infection up to the time of the patient's death. I have always regarded an inch or so as a fair margin, and, when I have been able to secure this, can scarcely recall a case of recurrence in the cut margin itself. Again, if these widespread disseminations were usual, how would the many successful cases of removal be accounted for? In my own practice I know of dozens of cases which remained perfectly well up to three to twenty-five years after removal where less than an inch of margin had been allowed. Lastly, amongst the most successful cases are those operations in which 2 or 3 in. of diseased bowel, with perhaps only a half-inch margin allowed, have been cleanly cut out, and an end-to-end anastomosis performed. Every surgeon may not be familiar with these cases in the rectum, but few can be without experience of the successful result that often follows an intra-abdominal section of a limited annular growth of the large intestine with an immediate end-to-end anastomosis. If the doctrine of the universal spread of cancer along long areas of the submucous tissue were generally accepted, I believe infinite harm would be done to operative surgery, for in every such case a grave increase of the danger of the operation would be entailed such as would be quite unnecessary and unjustifiable, and those brilliant cases of anastomosis made impossible, for you cannot join together in the rectum the ends if inches

of the gut have been removed, and I believe that an operation, now invaluable in properly selected cases, would soon fall into discredit if such wholesale removals became the fashion in deference to an unproved pathological theory.

DIAGNOSIS.

Diagnosis of rectal cancer can be made certain only by a digital examination, and a surgeon should never commit

Fig. 5.—Section from surface in a case of multiple polypi, cut at right angles to the surface, and shows how the epithelium lining the cavities in the deeper part of the tumour is in reality but an invagination from the surface.

himself to an absolute opinion unless the hard surface can be actually touched with the finger. If within 6 in., this can be easily accomplished, and, under an anaesthetic, with gentleness and care in avoiding the rectal folds, the disease can often be touched considerably higher.

The utmost gentleness must be used in examining rectal cancer, and the temptation to thrust a finger through it resisted. The bowel at the seat of disease is very rotten, and will at times tear and split like wet paper. I have twice seen death follow from acute septic peritonitis after a simple digital examination of rectal cancer; in each case the bowel had split into the peritoneal cavity. I have known two similar mishaps after dilating malignant strictures with bougies. As regards the sigmoidoscope, it is worse than useless, being at times positively misleading. Cancer can never be diagnosed to a certainty by sight alone; touch only by indicating hardness and friability has to be relied upon.

OPERATIONS.

Selection of Cases.—The selection of cases suitable for operation is a matter of utmost importance. To regard all, or even a majority, as suitable for operation will certainly bring excision into disrepute. Unless there is a fair and reasonable prospect of removing the whole disease it is better to leave it alone. For, if it is found impossible to remove all the disease, that which remains seems stimulated to increased vigour and grows more rapidly than if it had been left alone. Naturally operators will differ much in what they consider suitable cases. For my own part, I have not felt justified in recommending excision in more than one-third of the cases coming under my observation. I do not regard age as of much importance, and have operated at all ages between 15 and 80, and have been much struck how quite old people will stand well a moderate operation on the rectum.

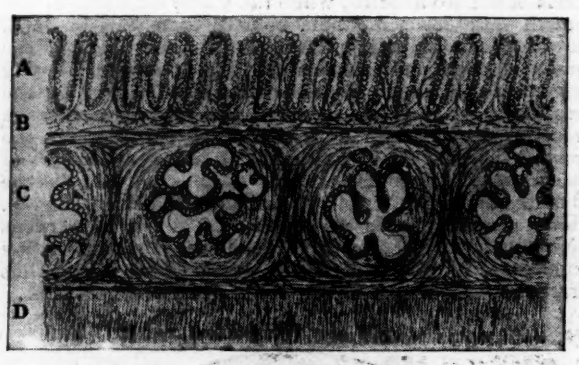


Fig. 7.—Diagrammatic. A, Mucous membrane; B, submucous tissue; C, growth in circular muscular fibres; D, longitudinal muscular coat.

The following are a few of the chief points that have guided me in the selection of cases:

Fig. 6.—Slow-growing malignant rectal tumour extending into muscular coat.

Fig. 8.—Section of surface at border of a malignant adenoid growth.

1. That there should be no obvious dissemination in the liver or other internal organs.
2. With the finger, under an anaesthetic, one should be able to define the upward edge of the growth if the operation is contemplated by the sacral route, or be able to push it upwards for an abdominal section.
3. That the growth should not be fixed or firmly incorporated with neighbouring parts, but that there should be some degree of mobility of that part of the

rectum in which it is situated upon the surrounding tissues.

If the rectum is once firmly fixed, its removal will not mean the removal of the disease. The rigidity of the bowel shows that the growth has extended beyond its walls, and that it has no definite limits. Where I have attempted a removal under these circumstances, there has invariably been a local recurrence within a few weeks, and the operation has been worse than useless. In cases where the rectum is firmly fixed, relief can only be afforded by timely colotomy. If there is any real question as to the possibility of removal, the surgeon will probably give the patient the benefit of the doubt.

Fig. 9.—Adenoid growth extending between the mucous membrane and muscular coat. Section is at right angles to the surface of the bowel. *b*, Hypertrophied Lieberkühn's follicles.

Colotomy.—If excision is impossible, colotomy is a most valuable palliative. It is in no sense a rival operation to excision, but invaluable in a certain class of cases where excision is out of the question. In the large number of the cases in which excision is impossible, any treatment that materially palliates the symptoms is worthy of consideration. In colotomy we have a means which not only robs the disease of its worst symptoms, but acts as a permanent safety valve against obstruction, while at the same time, by removing the constant irritation of the growth and putting the rectum at rest, it appears to diminish the activity of the disease, and indirectly prolongs life, as shown in Tables H and I. The suffering and misery of cancer are not so much caused by the disease itself, which is comparatively painless, as by the stricture which so frequently accompanies it. The constant desire to go to stool, the feeling of inefficient relief, and the dread of impending complete stoppage, are all due to the stricture rather than to the disease itself. What the patient passes is never a proper evacuation, but merely what dribbles through the stricture from a distended bowel above, analogous to what occurs with the urine from a distended bladder. The condition of the patient is generally markedly improved by colotomy, and the remainder of life rendered comparatively painless and tranquil. To suppose that, after the operation, the patient has motions constantly running from the side, is quite contrary to my experience. If the opening is made in the proper way and size, and care taken to keep the patient somewhat constipated, there is remarkably little trouble from this cause. By a mild aperient a good motion can be obtained on alternate days and a well-adjusted pad keeps the part clean and comfortable. Although in a few cases, generally through the opening being too small, colotomy fails to give all the benefit expected, in the majority of cases it affords most decided relief. In cases in which stricture has become marked, and which are hopeless for excision, the sooner a colotomy is performed the better. If done at this stage, there is very little danger in the operation, and the patient gets the full benefit. If delayed, half the advantage of the operation is lost, and when performed after complete obstruction it fails to prolong life in 50 per cent. of the cases. The effect of colotomy on the length of life will be seen in Tables H and I of the booklet handed round.

Excision.—There are practically only two ways of getting at rectal cancer, the first from below, including the sacral and perineal route; the second from above, known as the abdominal operation. Possibly in very exceptional circumstances there may be a combination of the two methods. There is no sort of rivalry between the two. Cancer in the middle and lower rectum can only be got at from below and not from above, while the disease in the upper rectum and sigmoid can only be reached from above.

As shown in Table A an overwhelming percentage of cases are situated within 6 in. of the anus, and therefore can be dealt with from below, probably not 10 per cent. originating above this height.

Sacral and Perineal Route.—In all operative surgery success depends on having a good view of what you are doing. Operations on rectal cancer have to be planned therefore to fulfil this condition.

For cases in which the upper border of the disease is not more than 4 in. from the anus, the lithotomy position is the best. A posterior division and dissection of the rectum up to or along the side of the coccyx, or removal of this bone if necessary, will be found to give all the room required, and it is better to remove each side of the rectum separately. If the patch of disease is limited, only involving a portion of the circumference, it is a great advantage to remove the growth with a moderate margin free of disease, and not the whole circumference of the bowel. Ever so narrow a strip of healthy mucous membrane greatly facilitates the after-treatment in the prevention of stricture, and some of my cases treated in this way remained permanently free from recurrence, and have had no trouble from stricture. Haemorrhage will give little trouble if, in making the transverse cut across the bowel above the limits of the growth, small consecutive portions of the bowel are seized with curved forceps (shown), and each bit transfixed with a right-angled needle and tied with strong silk above the grip. If the growth is more than 4 in. from the anus, it can be better removed by sawing across the lower part of the sacrum, 2 or 3 in. being removed. For this operation the position should be the prone one, with the thighs bent at a right angle, and hanging over the end of the table, the knees resting on a chair. If, in this operation, the lower part of the rectum is free from growth, it should be left, the diseased portion being cleanly excised. It may be possible in exceptional cases at once to unite the cut edges of the bowel end to end, but owing to the tension on the part, I have never yet succeeded in getting primary union in the lower rectum. On the other hand, I have had some very satisfactory cases of secondary joining. It seems advisable to defer this secondary anastomosis for a year or so, after which date a recurrence is unlikely. It will be found too, after this period, that the upper segment has become considerably prolapsed, protruding 2 or 3 in., and, the end of

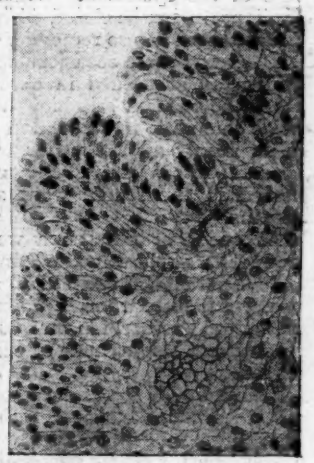


Fig. 10.—Growing margin of rectal cancer, high power.

the bowel being comparatively mobile, the two ends can then be carefully dissected out and united with little or no tension, and the superficial parts united over them.

One of the cases covered by Table A is an example of a thoroughly successful secondary anastomosis.

This patient was a lady under the care of Dr. Rushworth, of Hampstead. In 1898 the sacrum was sawn across high up, and 4 in. of the bowel excised, the section being about ½ in. clear of the growth on either side, the last 3 or 4 in. of the bowel, including the anus, being left intact. The peritoneum was opened; the ends of the cut bowel could not be drawn together, so the upper segment was fixed in the upper angle of the wound. Two years later there was no recurrence, but the upper bowel had prolapsed quite 3 in. The two ends were then freed from the surrounding tissue, and were easily joined together. The result was most satisfactory. The patient regained complete control, and has remained quite well for thirteen years.

Such a case seems a fair answer to Mr. Handley's teaching that as much as possible of the bowel should be removed. If this had been done the subsequent joining with complete control would have been impossible.

If the growth is situated high up, and takes the form of a limited patch on the anterior or lateral wall, I have found the following an excellent operation for removing it:

The patient being placed in the prone position, a 6-in. incision is made in the middle line, commencing at the lower third of the sacrum and carried down to the tip of the coccyx. The soft parts being reflected, the lower 2 in. or so of the sacrum is sawn across and removed with the coccyx, the tip of the latter bone being left. The posterior part of the rectum thus exposed is opened by a clean incision in the middle line. A strong thread is passed through either side of the divided bowel. The edges being thus held asunder, an excellent view is obtained of the growth, and enables it to be carefully and completely removed. The divided posterior wall of the rectum is again accurately united with sutures, and the soft parts brought together over it.

A ½-in. rubber tube is passed per anum well up to the resected portion and tied in. This prevents the rectum above the sphincters becoming distended with gas and discharge, and enables the interior of the bowel to be syringed out with boracic lotion two or three times a day. The tube can be retained to the ninth or tenth day, by which time the wound will have united.

Contraction at the site of excision must be looked for, and treated if necessary by bougies.

The advantage of this operation is that the mechanism of levatores ani and the sphincters is left intact.

In operating for rectal cancer a full-sized sound in the bladder is of the greatest assistance when dissecting the bowel off the prostate and base of the bladder. In these cases, if the disease is at all high up, the peritoneum will almost certainly be opened, but this does not seem much to increase the danger. When the peritoneum is thus opened, a fair-sized flat sponge, tied to a piece of strong silk, should at once be introduced into the opening, to keep up the intestines and prevent them being soiled during the rest of the operation. When all is complete the opened peritoneum can be closed with fine sutures, all the sutures being passed before removing the sponge.

I have on three occasions opened the base of the bladder and in all succeeded in closing the opening. In one of these the primary stitching held all right; in the others urine came into the wound in a few days. In both these cases nearly all the water was at first thus passed. It gradually, however, got less, and in one case permanently ceased in the fourth week and the other in about two months.

At one operation on a woman I think a ureter was wounded; anyhow, water came through the upper part of the wound on the sixth day, and continued to do so for nearly a month, when it gradually ceased. I do not think it was the bladder, for, on testing this by injection, it held the water all right, none of the injection coming out of the wound.

I am not able to see the advantage of doing a preliminary colotomy before excision. If it is on the ground of preventing the wound being soiled by faecal matter, this is a false hypothesis, for faeces appear quite innocuous in any wound if the part is kept clean. The operation, too, is premature if it is intended to correct a stricture that may never occur.

After-dressings require care, for there is a tendency for all retained secretions to rapidly decompose in this situation. Night and morning the patient is brought to the side of the bed, the part washed well with soap and water, and gently syringed out with some mild antiseptic, and lightly packed with gauze. It is generally desirable to keep the patient in bed from six to eight weeks. It is necessary to watch carefully during the healing for any sign of contraction. This begins to show itself in about three weeks to a month after the operation, or even later. If not treated immediately by a full-sized bougie passed daily and retained for a while, it will end in a most intractable stricture. The bougie may have to be used even for a year or two, but the time comes sooner or later when the tendency to contract disappears. Until it does so the bougie must be employed. In some cases the control in after-years is weak, but fortunately in most cases it is extremely good—in fact, nearly normal; and I think this control depends as much as anything on never allowing any degree of stricture to form.

Abdominal Section.—If the disease is beyond the reach of the finger it can only be excised by abdominal section, and the higher it is out of the pelvis the easier and more successful is the operation. As to whether it can be removed or not may not be clear till after the opening of the abdomen, and such an exploration is more than justifiable. If, after excising the portion of the intestine the cut ends can be brought together without tension, no doubt an end-to-end anastomosis is the right procedure. On the other hand, if the ends can only be approximated with tension, it would be highly dangerous to trust to their union. It would be better in these circumstances either to bring both ends out of the wound, or, if the lower end could not be brought up, to close it by inversion, bringing the upper end only out of the wound. It still might be possible to unite the ends by a secondary operation after the lapse of time had produced some prolapse of the upper segment, and thus union made possible without tension. The cases I have operated upon by abdominal section have been comparatively few and the mortality was far higher than in the cases operated on from below. But it must be remembered that these were mostly severe cases. The result in those that survived was excellent, and I have had no case of recurrence (see Table A). Seeing, therefore, that the disease, if left alone, is invariably fatal, and what good results may follow, it is well worth a patient's while to run a considerable risk on the chance of a permanent benefit.

RECURRENCE.

When this takes place it generally does so in the tissue lying external to the excised portion or in the glands and lymphatics lying in the sacral neighbourhood. Occasionally the recurrence takes place in the cut edges of the bowel itself. When it occurs in the glands or tissues external to the bowel, probably nothing further can be done; but if the recurrence is in the cut margin a second or even third removal may end in ultimate success. Cases in Table A are examples. In one of these cases a lady under the care of Dr. Stanley Smith had a growth removed. It reappeared in six weeks and was excised. It again recurred some months later, and was removed for the third time. The final removal was twenty-five years ago, and the patient is still alive and has never had any further recurrence.

To summarize the deductions to be drawn from the tables appended, the following appear to be some of the chief points:

1. That cancer of the rectum may occur at any period of life, but chiefly after middle age.
2. The disease is twice as frequent in men as in women.
3. The importance of an early diagnosis, for two-thirds of the cases were discovered too late to admit of excision.
4. That when removal was practicable nearly 40 per cent. of the cases were curable.
5. That if recurrence takes place, it almost invariably shows itself within twelve months, and is very rare after two years.
6. That colotomy prolongs life.

TABLE A.

This table gave full details concerning 445 cases arranged in chronological order, and included, with perhaps a few accidental omissions, all examples of rectal cancer seen by the author in private practice. It was originally intended to have included in the table hospital cases as well, but as they extended over a period of thirty years it was found impossible generally to trace their subsequent histories. This table was the foundation of

the other tables and was handed round at the meeting, but is too bulky for reproduction. The information supplied by it included the date of the case, the medical attendant, the sex of the patient, the duration of the symptoms, the height of the disease in the rectum, its treatment, the result. The name of the medical man who sent the case for consultation or operation, and who supplied information as to the after-history, was generally added as a means of identification, and to enable the statements made to be checked if necessary.

TABLE B.—*Showing Number of Cases at Each Period of Life.*

Under 20 years	3
Between 20 and 30 years	3
,, 30 ,, 40 ,,	25
,, 40 ,, 50 ,,	87
,, 50 ,, 60 ,,	109
,, 60 ,, 70 ,,	141
,, 70 ,, 80 ,,	61
Over 80 years	5
Not stated	11
Total	445

TABLE C.—*Showing Sex of Patients.*

Males	293
Females	152
Total	445

TABLE D.—*Showing Methods of Treatment Advised.*

Palliative	115
Operations	330
Advice refused or operation by other surgeons	73 Cases
Colotomy performed in	151 ,,
Excision in	107 ,,
Total operated upon	258 ,,

TABLE E.—*Showing the Mortality from Excision of the Rectum and Subsequent History of those who Recovered.*

Died	8
Recovered	100
Total	108

Subsequent History of the 100 Cases of Recovery.

Died from various causes without local recurrence	6
Disease recurred	40
Remained well (cured) after 3 years	42
Remaining well under 3 years	5
Subsequent history not ascertained	7
Total	100

Five of these cases were operated upon by the abdominal route. Of these two died.

TABLE F.—*Showing the Length of Time after Excision at which Patients were Alive without Recurrence.*

Over 1 year, number alive	5
,, 3 years, ,,	7
,, 4 ,, ,,	3
,, 5 ,, ,,	7
,, 6 ,, ,,	3
,, 8 ,, ,,	1
,, 9 ,, ,,	2
,, 10 ,, ,,	1
,, 11 ,, ,,	2
,, 12 ,, ,,	3
,, 13 ,, ,,	3
,, 15 ,, ,,	1
,, 16 ,, ,,	3
,, 17 ,, ,,	2
,, 19 ,, ,,	1
,, 22 ,, ,,	2
,, 26 ,, ,,	1
Total	47

TABLE G.—*Showing in 38 Cases the Dates at which Recurrence was Noticed.*

Under 6 months, number of cases	9
Between 6 and 9 months, number of cases	14
,, 9 ,, 12 ,, ,,	7
,, 12 ,, 18 ,, ,,	4
,, 18 ,, 24 ,, ,,	3
After 24 months	1
Total	38

TABLE H.—*Showing the Length of Life after the Patient was first seen when no Operation was Performed in 71 Cases in which the Date of Death was Ascertained.*

Lived less than 3 months, number of cases	8
,, between 3 and 6 months, number of cases	25
,, ,, 6 ,, 9 ,, ,, ,,	23
,, ,, 9 ,, 12 ,, ,, ,,	8
,, ,, 12 ,, 18 ,, ,, ,,	3
,, ,, 18 ,, 36 ,, ,, ,,	4
Total	71

Average length of life, 7.8 months.

TABLE I.—*Comparison with Table H, showing Duration of Life after Colotomy in 97 Ascertained Cases.*

Lived less than 6 months, number of cases	10
,, between 6 and 12 months, number of cases	11
,, ,, 12 ,, 18 ,, ,, ,,	19
,, ,, 18 ,, 24 ,, ,, ,,	18
,, ,, 24 ,, 30 ,, ,, ,,	20
,, ,, 30 ,, 36 ,, ,, ,,	5
,, over 3 years, number of cases	10
,, ,, 4 ,, ,, ,,	3
,, ,, 8 ,, ,, ,,	1
Total	97

Average of life after colotomy, 22 months.

TABLE J.—*Showing the Relative Rate of Mortality from Colotomy when Performed After and Before Complete Obstruction in 151 Cases.*

After complete obstruction, number of cases		21
Before ,, ,, ,, ,,		130
	Recovered.	Died.
After complete obstruction	10	11
Before ,, ,,	125	5
Total	135	16

REFERENCE.

[1] *St. Bartholomew's Hospital Reports*, vol. xxiii.

DISCUSSION.

Mr. CHARLES A. MORTON (Bristol) said: I had intended to say something about 21 cases of Kraske's operation which I have performed, but I found that if I did so my remarks would be too lengthy, and I will therefore confine them to the abdomino-perineal operation and excision of growth low down in the pelvic colon (or what until a few years ago we called the upper part of the rectum) wholly through the abdomen. After Kraske's operation I have found that there is a very great tendency to sloughing of the ends of the rectum at the junction. It is necessary to divide the strands of tissue holding up the rectum, which contain its vascular supply, in order to get it down far enough to make the junction. I thought if I divided this tissue, which in the higher parts consists of the mesocolon, from within the abdomen instead of through the sacral wound, I might be able by cutting very carefully at the root of the mesocolon rather than near its attachment to the bowel to save the vascular supply. I therefore experimented on the dead body. I presumed there was a growth situated at the level of the peritoneal reflection of the rectum, and I allowed an inch margin of healthy tissue above it. From this point I then divided the mesocolon upwards, keeping close to the sacrum, but I found that in order to bring the cut end of the pelvic colon down far enough to unite with the lower end it was necessary to cut the strand of mesocolon containing the superior haemorrhoidal vessels. I therefore never operated by this combined sacral and abdominal method for the purpose of saving the vascular supply to the bowel. But for other reasons I have now adopted the abdomino-perineal method in preference to Kraske's. I have found that most of my recurrences were in the bowel, and that therefore it was desirable to remove more of it, and that, though in a few cases the functional control after union of the rectal ends in Kraske's operation was good, yet the convalescence was so tedious, and in many cases the patient in the end would, I thought, have really been better off with an inguinal colotomy and an air pad, and so it seemed to me that it would be better to perform the abdomino-perineal operation. Its high mortality certainly made me hesitate a good deal, but as surgeons gain greater experience I believe this will be much reduced. I do not believe that

all that is necessary to get really encouraging results after excision of cancer of the rectum is to remove very great lengths of the colon. As Mr. Harrison Cripps has pointed out, recurrence often takes place, not in the bowel, but around it, or in the liver; but on looking through the records of my Kraske's cases I found most of the known recurrences had been in the bowel. I must say that within one year after an abdomino-perineal operation I have had extensive diffuse recurrence in the abdomen, though not in the bowel. In this case 16 in. of colon and rectum were removed. But the case was a particularly unfavourable one as regards the prognosis as to recurrence, as the patient was so young for cancer of the rectum—only 28. We have yet to learn the value of the abdomino-perineal operation in reducing the number of recurrences. With regard to the increased risk of this method, it seems to me, we have also much to learn. Some statistics have shown that it has been much greater in men than in women, and the explanation has been given that this is because the pelvis is deeper in men than in women, and therefore that operative manipulation is more difficult, and also that men stand all kinds of pelvic operations worse than women. Now, though a difference in the shape of the pelvis in males may account for some increased difficulty in manipulation, this would not be enough to make a decided difference in the mortality, and there is no foundation for the statement sometimes made that men stand pelvic operations worse than women. No doubt many more are done in women, for obvious reasons, but when one has to operate on suppurative appendicitis in the pelvis of a man, he does not specially suffer from shock. Really no satisfactory explanation of the remarkable difference in the mortality statistics of the abdomino-perineal operation for cancer of the rectum in men and women has been forthcoming, and it may be found to have been merely a curious coincidence of the early statistics of the operation. But with regard to the cause of the heavy mortality in both sexes, I wish Mr. Miles was able to be present at this discussion, and give us his own views on this subject from his experience in the twenty-six cases which he has published (BRITISH MEDICAL JOURNAL, October, 1910). My own idea, from a careful study of Mr. Miles's paper, is that the majority of the fatal cases were from some form of shock, either the typical form occurring at the time of the operation or a more gradual failure of vital power occurring during the few days following the operation. Six of the ten fatal cases were of this nature, the other four died from conditions which might be present in any intra-abdominal bowel operation, and such an operation is Kraske's. It would seem, then, from a study of these cases, that it is to some form of shock that the heavy mortality of the abdomino-perineal operation is due. I have operated myself by the abdomino-perineal method in six cases, with one death. They were not all rectal growths, according to the more recent description of the rectum. Some were in the pelvic colon, but as the whole rectum was removed, I may allude to them with growths of the rectum proper, and it seems to me impossible in discussing this subject to separate growths in the lower part of the pelvic colon (what we used to call the upper part of the rectum) and growths in the rectum proper. In three of my six cases shock was severe at the time of the operation, but it was successfully dealt with by saline intravenous infusion with pituitary gland extract added to it, and all these three cases made recoveries without any serious complications. Four of the successful cases were women. The one fatal case was a man, aged 60, who had so extensive a growth that it felt quite fixed on rectal examination, and I only opened the abdomen for the purpose of doing a colotomy. I then found I could just move the growth to a slight extent, and I excised it by a combination of the abdominal and sacral methods. It was an extremely difficult operation; there was so little loose tissue left around the growth, as it was so nearly fixed to the pelvic wall. He did not, however, suffer from any marked degree of shock at the time of the operation, and on the following day he seemed to be progressing fairly well, with a pulse of fair strength and not more than 90; but his strength then rapidly failed, and his temperature ran up to 106°, and he died.

In two cases I have attempted to do the abdomino-perineal operation, but had to abandon it. In one I found the growth involving some coils of small intestine; in the other I found the growth invading the bladder. I am sorry to say that in this case, in trying to make a separation between the growth and the bladder, I broke into both the rectum and bladder, and caused a fatal peritoneal infection. We all know how difficult it often is to tell whether a malignant growth is simply adherent to, or actually infiltrating a neighbouring organ within the abdomen. In this case I realized too late that it was infiltrating and not merely adherent. If I had known this earlier I might have resected a part of the bladder wall with the growth.

I have also operated on three cases of lower pelvic colon growth wholly through the abdomen. In one case I found malignant glands around the inferior mesenteric artery, which had to be divided, and I therefore had to resect a large amount of colon, because of interference with the vascular supply. After this extensive resection I decided it was better to complete the operation from within the abdomen, though this obliged me to cut across the rectum only an inch below the growth. I also performed an abdominal resection of a growth in the pelvic colon a week ago. In this case I could get well 2 in. below the growth after dividing the peritoneum around the rectum and drawing it up, and I therefore decided not to add to the risk by dissecting out the whole rectum. Some years ago I also excised a growth in the pelvic colon from within the abdomen, and united the ends. It would have been better in that case if I had done what I did in the two later ones—make an inguinal anus—as leakage occurred, and, though it did not infect the general peritoneal cavity, the union having been packed off with gauze, yet there was a very septic cavity in the pelvis, and the patient died of pulmonary gangrene.

Four years ago I made up my mind to operate on cancer of the rectum by the abdomino-perineal method instead of by Kraske's operation, but my last Kraske's operation was done in October of last year. I wished to do the abdomino-perineal operation, but when I opened the abdomen I found such a mass of fat in the pelvic meso-colon and lining the walls of the pelvis that even in the Trendelenburg position I could get no room to work in the pelvis, and had to do a Kraske's operation.

There is an important matter which needs discussion, and that is, Can we operate by the abdomino-perineal operation, and yet bring down the cut end of the pelvic colon and fix it in the perineum, or below the sacrum, after removal of the coccyx, or even in cases of very high growths unite it to a portion of the lower end of the rectum, as we have been in the habit of doing in Kraske's operation? In one of my cases I divided the colon at the greatest convexity of a loop of sigmoid that extended for about 6 in. from the posterior abdominal wall, and brought the end down and fixed it just below the sacrum after removal of the coccyx. It certainly ought to have had a good blood supply to its very end, as it was nowhere severed from its mesocolon, and yet very extensive sloughing of the end occurred. I have not made the attempt again, and it seems to me that an inguinal anus controlled by an air pad is really best. I have been very interested to read that some surgeons can bring down the cut end of the high pelvic colon, and fix it at the anus, and secure sphincteric control by bringing it out through the external sphincter, and can do all this by operating from the perineum. It seems an ideal method, but I cannot myself conceive how they can do it without causing sloughing of the end of the colon.

Now there is one thing in connexion with operations for cancer of the rectum about which there seems to me to be no possible doubt, and the importance of which I wish in the strongest way to emphasize, and that is, that in no case, other than squamous carcinoma of the anus involving the rectum, should a growth of the rectum ever be excised, either by Kraske's or the perineal method, without first exploring the interior of the abdomen. Surely it is unwise to subject the patient to the risk of the operation if there are growths in the liver or irremovable malignant glands, and by the simple proceeding of inserting a hand into the abdomen we can ascertain this. And not only can we thus detect contraindications to excision, but possibly the presence of malignant glands which can be excised. This has happened to me in two cases. In one I removed

a mass of glands around the inferior mesenteric artery, and in another a malignant gland in the mesocolon, at the bifurcation of the aorta. Moreover, by opening the abdomen, we may discover incorporation with the bladder, which might be dealt with by partial resection of that organ, or with the uterus, in which case the excision of rectum could be combined with a hysterectomy, whereas if we came across such complications operating only by the sacral route, we could not deal with them. Then I have in three cases found that a growth which appeared fixed on rectal examination, even when the patient stood up and strained down, was found to be movable on abdominal examination, and could be removed; and I have also found that a growth which seemed fixed on rectal examination alone, and on abdominal examination alone, was found to be movable, in an upward direction, when examined with one hand in the abdomen and the finger in the rectum at the same time, and it was removed.

Mr. G. Heaton (Birmingham) said: Owing to a variety of reasons the majority of sufferers from rectal carcinoma are not brought under the sugeon's notice until the disease has spread beyond the reach of the knife. In hospital practice in less than 25 per cent. is any radical operation possible when the patient first comes for advice. This is the more to be regretted in that the columnar-celled form of carcinoma, which is the common form of growth in the rectum, has but a low general malignancy if freely removed. The chief contraindications of any radical operation, now that surgeons do not hesitate to lay open the peritoneal pouch, are, in my opinion:

1. Implication of the urethra, prostate, or base of the bladder. When any of these are actually invaded, even though it may be possible to remove the growth, the knife is carried so close to the disease that recurrence, as a rule, soon follows.
2. Involvement of the vagina or cervix uteri in women. Here the surgeon has more latitude, as the vaginal wall or even the uterus may be freely removed with the mass.
3. Metastasis in the iliac glands or viscera.
4. Multiple metastatic deposits in the peritoneum.

Of the immense boon a well-executed inguinal colotomy confers on such inoperable cases we are all of us aware. Besides the relief of pain and suffering it affords, and the risks of intestinal obstruction it completely averts, I am myself strongly convinced that the patient's life is materially lengthened and that the cancer becomes less active in its growth. I have had patients who have lived in comparative comfort three, three and a half, and four years after a simple colotomy, and able until towards the close to take part in social and business life. With regard to the actual operation of excision or amputation of the rectum, we must be guided by the same principles here as guide us in our operations for carcinoma in other parts of the body. The amount to be removed, the restoration of the continuity of the bowel, and, in fact, every other consideration, must give way to a complete and thorough removal of that portion of the bowel in which the carcinoma exists, together with the lymphatic area into which it drains. For this reason the perineal route has given way almost entirely to the trans-sacral and coccygeal routes, or combinations of these with abdominal section. It is only by free access and exposure of the parts to be removed that we can hope to make the removal a thorough and effective one, and to secure for the patient an immunity from recurrence.

I have of late years urged the performance of a preliminary colotomy, done some eight or ten days before the major operation, and I do so for the following reasons:

First, through the small abdominal incision for the colotomy the upper limits and attachments of the rectal growth can be determined and the presence or absence of metastasis high up in the iliac or lumbar glands or viscera definitely recognized.

Secondly, by drainage of the bowel and diversion of its contents from the rectum the portion of bowel to be operated upon is rendered cleaner and healthier, and the risks of the subsequent operation are lessened.

Thirdly, during the actual operation the portion of bowel above that which is to be removed can be closed between two ligatures and the affected portion removed—if necessary with the anus itself—without opening it. The surgeon has not to consider how much bowel he can safely remove and yet be able to bring down the cut end of the bowel above without risk of sloughing from tension.

Lastly, the after-condition of the patient is better. He is saved from the incontinence of a sacral anus or the discomforts inseparable from a strictured rectum which often follow attempts to bring the bowel down to the normal anus.

Professor Sinclair White (Sheffield) said: For the purposes of this discussion I hoped to have contributed a complete record of my operations for rectal cancer, but I find the data concerning my hospital cases are too fragmentary to be of statistical value, beyond showing an operation mortality-rate of about 30 per cent. in 78 operations, most of which were of the trans-sacral type. In my private clinic I am more fortunate. Excluding cases of epithelioma of the anus, I have operated on 32 patients, and have fairly complete notes of all of them. They comprise 25 males and 7 females, and extend over a period of seventeen years; 29 were operated on by Kraske's method and 3 by the combined abdomino-perineal procedure. In the former group the abdomen was opened in every case, and, with but two exceptions, an iliac colostomy was established ten to fourteen days previous to excision. In 23 cases the lower end of the rectum, with its sphincter mechanism, was preserved, while in 6 a sacral anus resulted. Aseptic healing took place in 5 instances only, while in the others more or less suppuration, and usually a temporary faecal fistula, followed.

A tendency to stricture at the line of union of the bowel was frequently observed, but this was easily overcome by simple dilatation, and the functional results were, as a rule, quite satisfactory. No case was rejected unless the growth was fixed to the bladder or prostate, or there were secondary growths elsewhere. Death followed the operation within one month in 6 cases, giving an operation mortality-rate of 18.7 per cent. The causes of death were: Shock and exhaustion, 3 cases; peritonitis, 2 cases; and pulmonary embolism, 1 case.

The after-histories of the 26 survivors are as follows:

5 are alive and free from recurrences, after intervals ranging from four to thirteen years.
2 died from other causes than cancer after intervals of five and eight years respectively.
3, who were operated on within the last three years, as yet show no signs of recurrence.
1 died at the end of nineteen months from a cause other than cancer, but there was no autopsy.
1 patient is alive after 5 years, but has had two subsequent operations for local recurrence—the last two years ago.
14 died from recurrence, and in 8 of these the recurrence first appeared locally.

Having regard to the large percentage of local recurrences after Kraske's operation, it seems probable that, in the desire to restore the rectal tube with its sphincters intact, we do not always resect widely enough. The method should be restricted to specially selected cases where the growth is small, freely movable, and does not extend lower than 3 in. from the anus, and in which the patient's general condition is good. For such cases it is, I believe, still the best operation, but it should, I think, be undertaken only after an intraperitoneal search has been made to eliminate secondary growths and a colostomy established to enable us to operate under relatively clean conditions, and to secure rest and freedom from tension during the subsequent healing process. Incidentally I may remark, as bearing on the value of a preliminary examination of the abdomen, that on four occasions I have found secondary nodules in the liver which had not been detected by external examination, while in several cases a growth which appeared to be immovable when examined per anum was really movable and therefore operable.

For cases less favourable free excision, without attempting to preserve the lower end of the rectum, must suffice, and this is best done by Hochenegg's method. He closes the anus securely with a purse-string suture, and through a long sacro-perineal incision, and after removal of the coccyx and lower end of the sacrum, dissects out the rectum until well above the growth. The rent in the peritoneum and the skin wound are sutured, except where the liberated rectum comes through above. Then, after the application of a dressing, which is securely fastened over the wound by strapping, the upper end of the rectum is stitched to the sacral skin and cut away just beyond

the sutures. The operation is conducted throughout with the greatest gentleness and regard for asepsis, and those who have been privileged to witness him operating, and to observe his after-results, will bear me out in saying that, apart from the destruction of the normal anus, his method leaves little to be desired.

The combined abdomino-perineal operation is ideal in its conception, but has scarcely justified the enthusiasm with which it was first received. The mortality hitherto attending it has been very great, especially in the male, whose narrow and deep pelvis renders its performance a most difficult undertaking. My experience of it is limited to three cases, two of which were females and did well, while the third, who was a male, died of peritonitis.

The seven years that have elapsed since this subject was discussed at the Leicester meeting, while not remarkable for many notable advances in our methods of treatment, have strengthened the view that cancer of the rectum is, in the majority of cases, a highly malignant disease, much more so than cancer of the colon or stomach, and that local recurrence is to be avoided only by very free removal. Moreover, there can hardly be a doubt that incomplete removal is worse than useless. Much harm has accrued from striving after ideal plastic results, particularly in regard to a normally placed anus, and it cannot be too fully emphasized that such considerations should not be allowed to interfere with the primary object in operating—the radical extirpation of the growth. Opinions will, of course, differ as to the amount of inconvenience which an artificial anus entails, and sentiment here, as elsewhere, will always demand consideration. Personally, I believe that with a proper appliance it need not be a very great handicap to a patient's usefulness, nor a serious bar to his social enjoyment. I could mention many examples in support of these views, but one will suffice. I know a tramcar conductor who was, and probably still is, efficiently discharging his duties in a large city in spite of an iliac colostomy.

Mr. W. SAMPSON HANDLEY (London) pointed out that he had not made the sweeping general statements attributed to him by Mr. Harrison Cripps. In two cases of rectal cancer he had demonstrated cancer cells in the mucous lymphatic plexus of the bowel at distances respectively 4 and 6 inches from the apparent edge of the growth. The cells observed were undoubtedly cancer cells. Nothing like them could be found in the normal rectum, they occurred only in the cancerous rectum and in the neighbourhood of the growth. He had never stated that permeation invariably occurred at an early stage in all cancers of the rectum, nor denied the possibility of cure resulting from such a limited perineal operation as that advocated by Mr. Harrison Cripps. But though he had only succeeded in demonstrating permeation in two out of about ten cases, he was sure it occurred more frequently than this, for muci-carmine, the stain employed, stains only those cancer cells which are secreting mucin. Thus it might fail to detect cancer cells which had entirely abandoned their natural functions. Mr. Percival Cole had drawn his attention to the fact that in certain cancers of the rectum muci-carmine may fail to stain any of the cells of the primary growth. This difficulty merely emphasized the importance of the successful demonstration of mucous permeation in a proportion of cases. The slides were shown at the Royal Society of Medicine, and Mr. Handley's observations emerged unshaken from this ordeal. Mr. Cripps stated that Mr. Handley's observations were not borne out by clinical experience, but, according to Mr. Swinford Edwards, in half the cases of recurrence after the perineal operation, in which the bowel was usually resected within an inch of the growth, the disease reappeared in the cut ends of the bowel. This was exactly what might be expected if mucous permeation had commenced at the time of operation. Sir F. Wallis recorded a case in which, after removal of the lower 9 in. of the rectum, the disease recurred in the mucosa of the lower end of the brought-down bowel, involving it for 2 in. A more striking clinical confirmation of the correctness of the speaker's observations on mucous permeation could hardly be desired. The perineal operation for rectal growths in the ordinary situation was on pathological grounds quite indefensible. It was necessary to remove a considerable length of bowel to get beyond the limit of possible permeation. For this and for other reasons he advocated the combined abdomino-perineal operation with removal of the anus and its muscles, and the establishment of a colostomy. The preservation of the anus involved risk of recurrence in this region, and attempts to bring down the colon to the anus greatly increased the risk of operation, and led to the preservation of meso-sigmoid which might contain infected glands. The latter point had been especially insisted on by Mr. Miles.

The only serious argument against the combined operation was that its mortality had been too high. In the speaker's opinion, no operation with a mortality of even 20 per cent. could hold a permanent place in surgery, but the mortality was rapidly falling, and should come down to 5 per cent. if old and feeble patients were refused operation. For such patients colostomy was the proper treatment.

At the present time the combined operation in women had a very small mortality if terminated by a colostomy. Schloffer lost only 1 case of 15; Goulliond none of 11. The speaker had had 3 cases without a death. In men the mortality could, he thought, be greatly reduced by the adoption of proper precautions. More especially he referred to a method of his own whereby a catheter is tied into the blinded end of the colon, where it emerges at the future colostomy opening. Through this catheter large quantities of saline, which cannot be rejected by the patient, can be introduced during the day or two following operation. The catheter serves occasionally as a flatus tube, and the bowel is not opened until the fifth day. He attributed his favourable experience of the operation largely to the use of this method.

Mr. Harrison Cripps claimed, as an advantage of the perineal method, the restoration of anal function, an advantage dearly bought at the risk of recurrence, and, moreover, rarely secured. Mr. Cripps had referred repeatedly in his writings, and again that morning, to one particular case, in which an ideal result had been attained—that of Dr. Rushworth. Why had the result in this case made such a deep impression on Mr. Cripps's memory? He submitted, because of its rarity. In most cases the perineal method involved a sacral anus.

In conclusion, he would remind them that in past years Mr. Cripps's advocacy had established the operative treatment of rectal cancer upon a firm footing, in the face of much hostile criticism. Mr. Cripps had remained indifferent to that criticism, because he knew that the progressive elements of the profession were with him. At the present time those who advocated in rectal cancer an operation in accordance with the teaching of pathology—namely, the combined operation—could, for the same reason, regard the controversy with equanimity, confident that time would decide it in their favour.

Mr. C. P. CHILDE (Portsmouth) said: Although I have operated on occasion by all the routes, except the vaginal, the sacral route is the one with which I am most familiar, and I shall confine the few remarks I have to make to this operation, and to what I consider its advantages.

The first point is that cancer of the rectum, it does not matter how high up the growth is situated, provided it is free and otherwise suitable for removal, is readily accessible by the sacral route. The three positions I have tried for the operation are Littlewood's kneeling position, the exaggerated lithotomy position, and the left lateral position. Littlewood's kneeling position is very inconvenient for the anaesthetist, and I have not found it to possess any compensatory advantages over the other two. The left lateral position is, to my thinking, the best. The skin incision should be free, and a sufficient piece of the lower end of the sacrum, below the third sacral foramen, should be removed. Formerly I contented myself with removal of the coccyx only, but though the operation can be done with removal of this limited portion of bone, ablation of the lower end of the sacrum with it greatly improves the access, renders the operation quicker and easier, and haemorrhage, if it occurs from the deeper parts of the wound, can be much more readily dealt with. To sum up, with the patient in the left lateral position, turned over somewhat on to his face, and with the pelvis slightly raised, with a free skin incision, and with removal of a sufficient piece of the lower end of the sacrum with

the coccyx, the technical difficulties of the operation are mostly overcome; it can be quickly performed, there is very little loss of blood, the bowel with the connective tissue and lymphatics behind it can be very freely removed, and it is very seldom that any shock whatever follows it. It can be undertaken, therefore, without anxiety in quite old people. My last four operations, for instance, were upon patients 71, 71, 72, and 70 years old; all of them were very free excisions, yet none of the cases exhibited immediate effects from the operation of any moment whatever.

When I first began operating by the sacral route, I used to make a sacral anus in those cases requiring an artificial anus. This practice I have abandoned. If an artificial anus has to be made—a disagreeable thing under any circumstances—one within easy access of the patient—that is, in the inguinal region—is, in my opinion, far preferable to one behind. If the growth, therefore, is so situated that the sphincteric muscles have to be sacrificed, or in cases where there is any doubt on this point, I think the best plan is to perform a preliminary inguinal colostomy and excise the bowel a fortnight later. I believe this, too, to be the best operation when the patient is advanced in years, or his ability to endure a severe operation is problematical. I think avoidable primary risks are frequently run, owing to the natural desire, and owing to elaborate attempts to provide an ideal anus in the normal position, and that the risks of recurrence are often increased by going too near the growth in striving after the same object. The chief consideration should be a free excision of the disease and its neighbouring structures without subjecting the patient to an excessive primary risk; the consideration of the position of the future anus should be secondary. If these principles are sound, there is, I think, a great deal to be said in favour of (in a large number of cases, I do not say all) a preliminary inguinal colostomy, followed a fortnight later by a wide excision from below, as the surgeon is then free from any anxiety as to the position of the future anus; he is not tempted to go too near the disease in an attempt to get an ideal result; there is no risk of contamination of the wound with faeces, and there is the certain knowledge that the operation can be performed quickly and without putting any severe strain on the patient's immediate recuperative powers. If preferred, the operation can be done at one sitting in those cases in which no obstruction is present and the bowel can be thoroughly emptied previously. If the position of the growth and other circumstances are favourable for attempting to preserve the natural anus various procedures may be adopted, such as end-to-end anastomosis, bringing the upper segment of the bowel through the natural anus, etc. I was very successful in one case by splitting the sphincter and the levatores ani in the mid-line, as recommended by Sir Charles Ball, dividing the bowel circularly above the attachment of the levator ani, and turning each levator ani and each half of the sphincter outwards as a flap. This procedure gave good room and did not interfere with the nerve supply of the extrinsic muscles. When the bowel was brought down the two levatores ani and the two halves of the sphincter were stitched together and to the bowel. After a little while the patient had good control of both flatus and faeces; in fact, the functional result was perfectly satisfactory. Of course, if the operation is started with the intention of retaining the natural anus, and the bowel cannot be brought down without tension, the operation is completed by closing the gut and performing inguinal colostomy. It must be conceded, I think, that the operation by one of the combined routes fulfils more perfectly the requirements of the modern operation for cancer, but it is impossible to ignore the present heavy primary mortality.

It may be said that inasmuch as the disease is necessarily fatal, any amount of primary risk is justifiable in the attempt to secure a greater freedom from recurrence. But I think there are limits to this attitude; at all events there is not much satisfaction to anyone concerned in the operation, least of all to the patient, in the fact that though the operation fulfilled the conditions of an ideal operation for cancer, the patient died the next day as the result of it. Though I am an entire convert to the abdominal route in extirpating cancer of the uterus, in which the risk (about 10 per cent.) is, I consider, a justifiable one if better results accrue, I am not yet convinced that an operation with a mortality of somewhere between 30 and 50 per cent. is equally justifiable. The operation is comparatively recent, and the primary mortality of the abdominal route for cancer of the uterus was at first very high, and that for cancer of the rectum will probably diminish with experience and improvement in technique. But women are particularly tolerant of operations on their genital organs, and I am doubtful whether it will prove as easy to reduce the primary mortality in extirpation of cancer of the rectum by the abdominal or one of the combined routes.

Mr. HERBERT J. PATERSON (London) said that no one had a greater regard for pathological work than himself, but at the same time he thought that some of the conclusions come to in recent years had tended to retard rather than to hasten progress. He ventured to dissent from the view that it was advisable to open the abdomen in every case, in order to exclude the presence of secondary growths in the liver. To explore the liver from an incision in the lower part of the abdomen was neither easy nor satisfactory. He asked those who advocated this procedure in what proportion of cases in which a secondary carcinoma of the liver was present would such growth be detected by abdominal exploration? He himself thought that in quite half of the cases in which secondary growths were present such growths would not be detected by exploration on the operating table. Mr. Paterson submitted that Mr. Cripps's statistics were a sufficient answer to those who advised preliminary abdominal section. In another respect pathological teaching was not in accordance with clinical experience. If it were true that cancer cells extended widely beyond the primary growth, then there would be few cases in which it would be worth while to operate. They had all often met with cases in which the margin beyond the growth removed was very small and yet the patient had remained free from recurrence for many years. He thought that another interpretation might be placed on Mr. Handley's researches. If it were true—and he had such a regard for Mr. Handley's work that he felt bound to accept his facts—that isolated cancer cells extended widely beyond the limits of the growth, then the inference was that after removal of the primary growth, Nature was able to deal with the isolated cancer cells. To this extent pathological teaching was misleading them. To adapt an American simile, "the pathological tail was wagging the surgical dog, instead of the surgical dog wagging the pathological tail." He regretted that the expression "ideal result" had been applied by one of the speakers to those cases in which the normal anus was preserved after a trans-sacral operation. While fully admitting the advantage of preserving the anus when possible, he thought that no cosmetic consideration should be allowed to influence the necessity for adequate excision. The ideal operation was not one in which a good cosmetic result was obtained, but the one in which the patient remained free from recurrence. The most striking surgical fact with reference to cancer of the rectum, and, indeed, internal cancer elsewhere, was the small proportion of cases in which a radical operation was possible at the time the patient came under the surgeon's care. He believed that it was Mr. Cripps who first urged the view that when a radical excision was impracticable colostomy should be performed, even in the absence of obstruction, on the ground that the diversion of the faeces diminished the rate of growth of the cancerous tumour. If they went over their cancer cases and noted the number of patients suffering from carcinoma of the rectum who had lived several years after colostomy, they must admit there was considerable justification for Mr. Cripps's hypothesis. He remembered several of Mr. Cripps's patients who had lived over five years, and he himself had three patients who had lived five, five and a half, and six and a quarter years respectively after inguinal colostomy for rectal carcinoma. He was not sure but that in this matter they were moving along wrong lines. Their efforts had been directed to more extensive operations, whereas they should have aimed at earlier diagnosis. To his mind it was an open question whether extensive abdomino-perineal operations, at any rate in the majority of cases, were worth while. In any case he thought they should clearly distinguish between two classes of cases: Early cases in which an extensive operation was done deliberately to eradicate the disease as completely as

possible; later cases in which an extensive operation had to be done in order to remove the growth. He questioned very much whether the operation in the second class of case was worth doing, and if early diagnosis were the rule they would never require to be done. If they were to obtain better results than at present, it was by early operation rather than by more extensive operations.

Mr. A. DON (Dundee) said: I am a strong advocate of the combined operation, as I believe that we must follow the teaching of pathology, and if we cannot remove the disease we must be content with a colostomy. I therefore begin by making the left part of a Mackinrodt's incision, and examine the tumour and the whole of the abdomen for new growths. If I find none I now decide to remove the disease; I extend the incision and get a good view of the pelvis. To prevent haemorrhage one may tie the internal iliacs, though it is quite easy to check the haemorrhage as it occurs with such a free view of the pelvis. No doubt shock has much to do with the mortality, and I believe that spinal anaesthesia helps to prevent shock, and I use it, if necessary, with slight general anaesthesia, in all cases. I think we should be able to gauge our own ability to remove a growth, and the patient's ability to stand the operation we propose. It seems illogical to explore the axilla in all cases of cancer of the breast and to just remove the growth in rectal cases without paying any attention to the nearest glands, and the increased danger of the modern operation for cancer of the breast has been held to be no bar to its almost universal acceptance by surgeons. Why should we, if we are to do anything more than colostomy, not go equally far and attack the glands? I have elsewhere advocated, though never practised, transplantation of the ureters along the brim of the pelvis; and I feel that such an operation would be justifiable if explained to our patients, as an alternative to doing nothing but prolonging his life.

Mr. JORDAN LLOYD (Birmingham) thought that surgeons in the fifties were apt to look at surgical problems from a different standpoint from surgeons in the thirties and forties. Whether this were due to cerebral degeneration or to greater experience he would not like to say. He had arrived at firm conclusions on the question of the operative treatment of cancer of the rectum, and his present attitude was not that of the young advanced modern surgeon. The majority of cases that came to him were best left alone. The percentage of cases where good results were to be expected was very small. It was easy to say that early recognition of cancer was the secret of success, but he went further and held that it was of equal importance to recognize early the kind of cancer. If the cancer was big enough to form a mass, whether it spread by infiltration or by permeation it had to be approached with great care. He wished to revive the designation "tubular cancer" used formerly by Mr. Cripps; he had at present in his observation a case of that kind operated on by Mr. Cripps sixteen years ago. In any case mortality was high, and the results did not convince him that the extensive operation was justified, though he did agree that some of the modern operations might establish themselves in favour. In regard to examination of the liver, he doubted whether such an examination could be efficient through a small incision as had been recommended by some speakers.

Mr. ALBERT LUCAS (Birmingham) could not speak with authority on the abdomino-perineal route. Every case of carcinoma of the rectum was to be dealt with on its merits. Many small growths could be removed by taking away the coccyx, and perhaps in addition the lower part of the sacrum. He felt certain that these patients did as well as if an abdominal operation had been performed in addition. If the growth were extensive, it was preferable to adopt the combined route. Where the growth was adherent to the bladder or prostate in front or the sacrum behind, it should not be touched. It seemed as if the pathological theory of permeation was not borne out by practical experience when a margin of half an inch to an inch sufficed. Probably Nature herself dealt with cancer cells beyond the half-inch area. The mortality of his own and his colleagues' cases was much higher by the combined route than by the perineal route, high though it was. He regarded it as an unjustifiable operation to remove practically most of the contents of a man's pelvis.

Dr. ARMSTRONG (Montreal) had come to employ the combined operation in many cases where the growth was large and particularly where there were obstructive symptoms with toxaemia. He operated in two stages: First, opening of the abdomen, and in the absence of metastases, separating the lower part of the colon and dividing the bowel low down; the end of the bowel was clamped, cauterized, and pushed into the hollow of the sacrum and the peritoneum closed with sutures; the lower end of the upper segment of bowel was employed as a permanent colostomy. The second stage was performed a few days later, when the lower end containing the tumour was removed by the perineal route. His mortality was low. The left inguinal colostomy was on the whole quite comfortable, and did not interfere with people taking their place in society to some extent.

Mr. HEY GROVES (Bristol) said that the fact that metastasis was often found in the liver by a preliminary abdominal operation fully justified this procedure. He related two cases in which a sacral operation was followed by recurrence because too little bowel had been removed in order to do a union. In both these the combined method had given a lasting good result. He was convinced that complete removal of the whole rectum and a part of the colon by the combined method ought to be the method of choice in most cases. The two stage method was strongly advocated from personal experience.

Mr. ANDREW FULLERTON (Belfast) said he did not agree with Mr. Cripps that the sigmoidoscope was useless in the diagnosis of rectal cancer. He had recently seen a case in which the patient suffered from chronic diarrhoea, and in which the growth could not be felt by the finger. The sigmoidoscope showed a growth in the upper part of the rectum beyond the reach of the finger. This growth was subsequently removed by the combined method. He wished to mention two cases in which ideal results were obtained after removal of the rectum. One was a woman aged 60 years, in whom he performed a trans-sacral operation, removing the coccyx and a very small portion of the lower part of the sacrum. An attempt was made after removing the growth to bring the upper and lower portions of the bowel together. Primary union did not take place, but by tying a Paul's tube into the rectum through the anus the faeces were encouraged to come by the normal route, and in a few weeks the posterior wound healed. The patient was now—about nine years after operation—perfectly well, with full sphincteric control and without recurrence. The only sign of operation on the bowel was a thin wide ring in the bowel at the junction of the segment. In a second case, a man aged 50 years, he operated by removing the coccyx, separating the bowel from below, and, after dividing the superior haemorrhoidal artery well away from the bowel, bringing the pelvic colon down to the anal canal bared of mucous membrane. This patient—now more than four years after operation—had a functional anus, and almost complete control. He mentioned the operation of opening the abdomen, tying the superior haemorrhoidal or inferior mesenteric artery, and bringing down the pelvic colon to the anus, but he had seen sloughing of the bowel take place.

Mr. G. P. NEWBOLT (Liverpool) had followed the operative traditions of Mr. Harrison Cripps in doing the perineal operation. If Mr. Sampson Handley's pathology was right, it was impossible to operate successfully by the perineal route, but Mr. Cripps's statistics rather tended to disprove the theory. In the Kraske operation prevention of haemorrhage was of prime importance. If the sacrum was not interfered with it was better for the patient. He doubted whether the mortality of the combined operation could be reduced below 20 per cent. A preliminary colostomy was reasonable, but it was not always practicable. He narrated a case of recurrence six years after operation, a mass being found adherent to the sacrum. He thought it was important to exercise great care in selecting cases on which to operate.

Mr. Harrison Cripps, in reply, said he was struck by the appearance of rivalry in the discussion between the two operations: the perineo-sacral and the abdomino-perineal. There was really no rivalry between them. It would be as absurd to attack a low rectal cancer by the abdominal route as to attack a very high one by the perineal route alone. Each case must be selected and dealt with on its merits. In doubtful cases it was quite right to do a preliminary abdominal section to find out if complete removal were possible. Success in operating in rectal cancer depended more than anything else upon careful selection of the case, and in not binding oneself to do any one particular operation, but to operate on the lines dictated by common-sense principles.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF URINARY TUBERCULOSIS.

OPENING PAPER.

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I feel it will be readily conceded that the subject of urinary tuberculosis, which has been chosen for our discussion this morning, covers a very large area and lends itself rather to discursiveness. In order to minimize this disadvantage, I suggest, as introducer, that it would be as well to remind ourselves of some of the chief conditions already accepted as facts by the majority of the workers in this field.

The international consensus of opinion formed during the last decade and reflected in the surgery of the world has for its bed-rock truth the fact that the kidney eliminates bacteria and the poisons they engender; and that the kidneys suffer more or less acutely according to the character and strength of the bacterial poison which reaches them and the health of the gland through which the poison passes. Should one kidney suffer locally from tuberculosis because it chances to offer a non-resistant field to the transient passage of the bacillus brought it for elimination from some focus in the body, the septic processes of this local destruction must be eliminated by both kidneys. Both kidneys must eventually suffer, though not necessarily by tubercle. I apologize for touching, even thus cursorily, on this nursery knowledge.

Built on this basis is the first article of faith, which is, that urinary tuberculosis nearly always starts in the kidneys, and generally in *one* kidney,* and not in the bladder; that the urine stream, laden with tubercle and toxins from the local renal destruction, descends the ureter, irritates the mucous membrane of that tube, and finally affects its orifice in the bladder and the bladder area around it. It is held, rightly or wrongly, that there is no such disease as *primary* tuberculous ureteritis or primary tuberculous cystitis; the changes visible in the bladder in an early stage are only those due to the action of a caustic urine.

The second article of faith, which you may prefer to consider as dogma, is that there is no chance of self-repair in the tuberculous kidney. It is stated that there is no known example open to criticism of spontaneous cure. Upon these grounds it is argued that, if the diseased kidney (which holds the primary focus) can be detected and removed *early*, the other kidney will be saved from septic and tuberculous changes, the bladder will heal spontaneously, and the patient will, as far as the urinary tract is concerned, be cured.

It may be pertinently remarked that surgery alone is responsible for these opinions, not pathology. To that I would answer, the surgeon records only early and living facts. Thus the results of removing the kidney for tuberculous disease embracing over a thousand cases were reported to the great congresses of Vienna and Rome[1] last year and this, by Israel, Wildbolz, Legueu and Chevassu, and others. It is asserted by Legueu that half of the cases were cured, one quarter were relieved by this means, and this with a 6 per cent. immediate mortality and an 18 per cent. subsequent death-rate. Such facts support the first article of modern surgical faith.

Our task to-day, starting from the plane of recorded and accepted facts, seems to resolve itself into two divisions, but I do not wish by suggesting this to limit in any way the speakers or to hamper discussion. I think we have to ask ourselves, Is it our experience that the kidney is always the source, the starting point, of tuberculous disease in the urinary tract? And, secondly, Is surgery the only means of cure? These are the vital questions, and we in Great Britain are still divided in opinion on them. I venture to think we cannot answer them either definitely or accurately without leaving the male cases out of consideration. We should confine our study at first solely to unassailable clinical facts observed in female cases. Women are easy to investigate; they are not endangered by the process, as are the males; they present undistorted symptoms, being uncomplicated by genital tuberculosis, so that from them we can obtain a vivid, easily controlled, precise picture of what urinary tuberculosis really is. Only from a sure basis like this can we determine the economic value of the signs and symptoms and results of treatment of the disease in both sexes. My own contribution to this discussion will be influenced by this opinion and will be mainly taken from the first 50 cases of nephrectomy I have performed for tuberculosis in the female, balanced by a series of unoperated cases. With this can be compared a series of male cases, and upon these findings I would venture to ground my own opinion.

The Diagnosis of Urinary Tuberculosis.

It will be conceded that in 90 per cent. of the cases the expert bacteriologist can give a definite opinion as to the presence of tubercle in the urine and the grade of the destructive process, whether it be acute or quiet, simple or septic. Upon this it follows that any practitioner encountering a case of cystitis or renal pain with pyuria in the well-to-do without obtaining an expert bacteriological opinion on the urine, lays himself open to the censure of grave neglect. I mention cystitis and renal pain with pyuria, because the onset of the disease in women—and I am now alluding merely to the female—is marked by one or the other in about equal proportions.

I pause to make an important digression. Is there a clinician of any worth who does not now insist upon obtaining the onset symptoms of urinary disease? I doubt it. Onset symptoms are clue lines to accurate diagnosis, and often prognosis, in many urinary diseases. But need the practitioner always wait for the report of the nature of the bacteria before he can give a probable diagnosis of the cause and source of the trouble? Perhaps not. In 84 per cent. of female cases he can by a vaginal or rectal examination detect the thickened ureter as it enters the bladder, and this is the distinguishing mark of early ureteritis in renal tubercle, and indicates the corresponding kidney as being involved. I qualify this by saying that I generally meet with the cases after three months' to seven years' duration, and the percentage I give is what I have myself detected. It may be that within only a week or a month of the onset the thickened ureter is not so often encountered. In 1900[2] I pointed out the "thickened ureter," having noticed it for nearly a decade, and it has since been insisted on by Kelly, Caspar, and others. I thought at first it was only found when renal colic was experienced, but I know now that it is absent only in 16 per cent. in women when the disease is in the kidney, and I am certain when the thickened ureter is present that it forms the key to the correct diagnosis—the prognosis and operative treatment of the disease. Permit me to particularize.

The Swollen Ureter of Tuberculosis.—Interstitial Ureteritis.

It varies from the size of a slate pencil to that of a massive thumb (8 per cent. in my cases). It is apparently produced either rapidly or gradually by the caustic nature of the urine issuing from an eroded renal pelvis, affecting the mucous membrane of the ureter and penetrating the

* 36.7 per cent. of all tuberculous infection was confined to one of the two kidneys on *post-mortem* examination (Kryzwick). In 68 per cent. of all urinary tubercle the lesions were confined to one side at death (Halle and Motz). In 13 per cent. of all urinary tubercle the opposite kidney was the seat of pathological process other than tuberculous (Halle and Motz).

walls of the tube. In one case with a history only of seven weeks' bladder distress (40 urinations in twenty-four hours) the ureter was like an enormous thumb. In this case a small abscess in the renal cortex had burst into the pelvis (discovered on operation) and probably the acuteness of the condition was due to this. It may take longer—six to twelve months (?)—to evoke a well-marked thickened ureter.

Microscopical examination of the thickened ureter shows that the trouble is mainly inflammatory; giant cells are present, it is true, but tubercle bacilli are very rarely discovered. Upon this hangs an important surgical lesson, to which I will refer later.

There are two varieties of thickened ureter. Both can be positively identified by the cystoscope. The exact difference in their causation is a matter of speculation. The more common variety (65 per cent.) stops short, so to speak, at mere size. The channel certainly becomes warped and here and there obstructed to the free flow of urine, but this, I believe, is merely due to irregularity in the thickening, and not caused by actual contraction (stricture). It causes an irregularity and patency of the orifice of the ureter. The less common variety (27 per cent.) undergoes interstitial contraction—not only concentrically, but also longitudinally, and the ureter is actually shortened in length as well as strictured. As it shortens it drags on the corresponding side of the bladder. This shortening of the ureter causes a characteristic cystoscopic picture of great value, to which I shall refer directly.

It might be thought that the contracting, retracting type is merely the result of age—just as stricture of the urethra is the result of years of penetrating urethritis. Against this is the fact that the retracting type may appear within three months. In the retracting type there is always a small, unfeelable, "dry," irreparably diseased kidney with marked fibroid change in the glandular structure.

Should the kidney be removed or become quite useless from obsolescence, the ureter returns to a normal state of size and flexibility. In some cases this thickened ureter closes entirely, and the kidney is useless, but it does not cease to infect the body.

Its Economic Clinical Value.—I need hardly say that it is the thickened and obstructed ureter which causes the danger to the kidney and the pain to the patient. I would add, it is the ureter which shows which kidney is affected. It is the ureter alone which is the best guide to treatment and prognosis, both for the clinician and the surgeon. To support this latter I must ask your attention to one or two points in the ureteric meatoscopy of the tuberculous kidney.

Cystoscopy.

I pointed out in 1900[3] the various changes which took place in the visual aspect of the ureteric orifice as indicating tuberculosis of the kidney. I need not here refer to these, except to say that in women the changes are so characteristic that I have removed the kidney on cystoscopic grounds alone. In only 8 per cent. was the ureteric catheter really necessary. I have frequently removed the diseased kidney upon the appearance of the orifice alone, combined with a bacteriologist's report that tubercle was present, and that without opening the kidney to be assured there was tubercle within it. I am glad to say I have not yet been mistaken in my estimate.

The Pulled-out Ureteric Orifice.

The most characteristic appearance, and for the description of which I am especially responsible, is "the retracted or pulled-out ureteric orifice." I described this in 1900.[3] It occurs in women in 27 per cent. of the cases, and has invariably indicated a small tough fibroid tuberculous kidney with an eroded pelvis and a very thick and narrowed ureter.[4] Such kidneys are quite irreparable and need clean nephrectomy. The condition denotes a capacity for firm and rapid healing (asepticity being assured), and such cases do well also remotely. I look upon them, rightly or wrongly, as evidence of what used to be called "fibroid phthisis." This condition raises this pregnant and difficult question, As hard carcinoma leads to similar fibroid change and similar rapid healing after operation, what is the connexion in the fibrino-plastic element of the blood in the two diseases?

The Irregular Ureteric Orifice.

In the larger number of cases the orifice of the diseased ureter is deformed—irregular; one cannot classify the changes, for they do not group themselves, but they are evidences of ureteritis, and, I submit, only one condition affects the surgeon. That is when small clear bubbles appear on the ureteric meatus and around it. These are evidences of acute recent ureteritis, and in these instances I wait, for those nephrectomies I have done in this acute stage have healed execrably. In nearly all early cases the red blush—due to scalding of the mucous membrane—is most marked in the neighbourhood of the orifice involved.

How should Ureteric Meatoscopy Guide the Surgeon?

If there are evidences of little bubbles at the meatus he had better, I think, wait a few weeks and effect subsidence of the acute stage by appropriate medicine and then nephrectomize. If the ureteric orifice is retracted, pulled out of position, there is, in my opinion, no second course—he must nephrectomize if he is to effect a cure. If the ureteric orifice is patent and there is no renal pain he may temporize, for there is a free outlet for the kidney. I do not myself temporize, for my nephrectomy usually follows on the cystoscopy at once. These are operative facts checked as far as can be done by the eye and the pathologist. Contrasting these with another series in female patients who refused operation, the cardinal signs and symptoms appear nearly in the same proportion. But there are a few in which I declined to operate because I could not obtain evidence of tubercle in the kidney. I may have bungled. There was obvious tuberculous ulceration of the bladder, but the ureters were sound and their orifices visually healthy. Till these few cases are cleared up I cannot assure myself that urinary tubercle always starts in the female in one kidney. This leads to an important and concluding point.

Abacillary Tubercle.

There remains a very small series of cases in which I could obtain no evidence of tubercle either from the bacteriologist, the cystoscope, the ureteric catheter, the radiograph, or the various other methods of investigation. Some of these I have accidentally flared up by means of tuberculin, the kidney inflaming and necessitating operation. On examination of such kidneys after removal, the tubercle was found in the renal pelvis, and microscopical sections revealed the bacillus. Nor is it only tuberculin which causes such an explosion. The influenza bacillus can; an attack of acute coli or a carbuncle can—even vaccine for small-pox. A girl was admitted into hospital with so-called left-sided pleurisy pain. Dr. Hadley, under whose care she came, negatived the diagnosis and sent the urine, which contained pus, to be examined. While this was being done, a scare of small-pox occurred, and every one was promptly vaccinated in the ward. At once the pain in the girl's side, which had been relieved, returned and became acute; the patient became dangerously ill, and I removed the left kidney at once. It proved to be tuberculous, but grafted on it was an acute haematogenous bacterial infection which resembled the *Bacillus coli communis*. The girl promptly recovered. This may afford a valuable hint of the searching diagnostic power of weak vaccines. Latterly a kind of Wassermann reaction has been introduced and reported as being of use (Heitz-Boyer), and some here may speak of its value in detecting such obscure cases. I, unfortunately, cannot as yet speak definitely about it. If, now, I examine a corresponding series of male cases, I find that pure urinary tuberculosis is but seldom met with. When the male patient has applied to me, he often has genital tubercle, and some have had genital tubercle years before urinary tubercle. I can with ease place before you 150 cases of prostatic and epididymal tubercle which were unaccompanied at first by urinary symptoms. This is common knowledge. If we put out of court all such genital cases exhibiting urinary tuberculosis, do we find the male different to the female? I think so. The disease is generally more severely marked in the male than in the female. The thickened ureter and ureteric visual changes, when they exist, are the same, but they are less easy and less often found, I think, than in the female. In other words, though the vesical trouble exists, the renal origin is more doubtful. Moreover, it is certain in hospital practice that the male is more prone to

septicity and to active suppuration of the disease in the kidney than the female, probably due to traumatism of active labour. The death-rate is higher in operative procedure (6 to 12 per cent.); the subsequent mortality is greater (18 per cent.).

When, however, the ureteric signs of renal tubercle exist, the sooner the kidney is removed the better.

This leads us to the important question of treatment. At present two schools oppose—those advocating tuberculin and hygienic measures in all cases, and those insisting on early operative procedure.

Perhaps I may seize this opportunity of stating my own relation to tuberculin. I first used it twenty years ago—I published my work in 1900. I have continued to employ it still, always in picked cases and in my own way. When I first advocated its medical employment (Medical Society of London, 1904) the profession had refused it. The disastrous results of Koch's early work had caused this revulsion, and it was tabooed until it was controlled by the opsonic index. I never talked of it as a "cure," only as the most useful remedy we possessed. This opinion I still hold; I cannot point to a single cure. Some patients, who can bear the treatment—for some cannot—increase in weight, feel greatly improved in general health, their micturition troubles subside to some extent, and for perhaps two years the men do well, and for five years the women are well; then mostly the disease gets the ascendancy and they go downhill. It acts best in women, and is often dangerous in widespread tubercle, such as genito-urinary tubercle. It can only, I judge, be used under five conditions: (1) When operative interference is refused and there are no extensive deposits of tubercle; (2) when the ureteric meatoscopy demonstrates the ureter to be recently and acutely inflamed, and therefore the patient temporarily an unfit subject for operation; (3) in those rare cases when the disease is apparently confined to the bladder, both ureteric orifices being healthy and the catheterized urine from each kidney being tubercle-free; (4) after nephrectomy in order to help to heal the bladder lesions; (5) when the clinician is dealing with latent renal tubercle and needs evidence of that affection in that organ. What, then, is left? If we do not believe in spontaneous cure arising during the expectant treatment—and I do not, though I admit I have seen cases heal as far as the bladder is concerned and remain well for years—what is left but operative treatment?

Operative Interference.

This must be considered under three heads—that directed against the kidney, the ureter, and the bladder—due consideration being given as to whether the disease in the bladder is early (within one year) or advanced.

(*a*) *The Surgery of the Kidney.*—I do not mention resection of tuberculous areas of the kidney or drainage of the pelvis; they are futile procedures, and merely lead to disaster. The kidney must be removed or left alone.

Nephrectomy.—Let us acutely mark what modern nephrectomy for tuberculosis means. It is essentially a dissection, not the savage "pulley-hawley" gallery practice of the nineteenth century. For a modern surgeon to burst a cyst and flood the wound with pus, or knick a pelvis or allow a cut ureter to leak, is to invite scathing criticism and court the disaster of a subsequent sluggish, gaping, tuberculous wound.

The careful aseptic dissection out of the entire kidney in its capsular fat undertaken in the female in an early stage within, say, two years, should result in about a 2 per cent. immediate mortality. My own is 4 per cent., but I lost an early case, to my lasting grief, from slipping of the pedicle. The end result in most of such cases will be found extremely good. They regain bladder power, marry, and bear healthy children. My longest record dates back to a case done in 1896. With men the mortality is greater, the wounds are slow to heal because they are often infected, the death-rate is 6 to 12 per cent., but this is not all. The operative interference undoubtedly stirs up mischief; most of the men who die within six months (12.9 per cent., Israel) die of chronic lung trouble or heart failure; men seem especially prone to subsequent heart failure; perhaps this is due to septic changes in the heart muscle.

Acute miliary tubercle supervenes twice as often in the first six months after operation as in any period of the subsequent life. This Israel considers is the direct result of the operation.

Half the ultimate death-rate, 10 to 15 per cent., happen at the end of the second year with lung or kidney trouble. It is stated that a half to three-fourths of those operated on are cured.

(*b*) *The Surgery of the Ureter.*—As regards the ureter, seeing that microscopic examination proves the bacillus to be absent and the condition merely inflammatory, it is needless to resect it to its lowest point at the bladder as is advised. Still, a ureteric sinus remained in 11.5 per cent., and it may remain open for four years (Israel). The little expedient of treating the interior of the ureter for several inches with pure carbolic, and then scooping out the mucous membrane and crushing the sausage skin left between pile crushers, will often ensure primary union.

(*c*) *The Surgery of the Bladder.*—In the early stages there is no doubt the less the bladder is meddled with, either with the cystoscope or the curette, the better. In women the lesions are not tuberculous at first—they are merely inflammatory. The lesions heal spontaneously; the scars can be seen years after. There is no doubt that tuberculin helps the process of repair. But when the bladder has become thoroughly implicated and the mucous membrane eroded and the muscle interstitially affected, the future health of the viscus is not doubtful. The organ is ruined.

Dr. Newman, of Glasgow, reports good results from curetting. I have nothing good to report. The good done in my cases was only temporary and the disturbance perpetuated the disease. In one case in which the bladder distress was unbearable I performed ureterostomy with great relief. As this case carried me through twenty years of all the advances in my knowledge of tubercle and all the newer methods of detecting and diagnosing it, I venture to give it in conclusion.

A girl, aged 18, came to me from Dr. Steele of Boxmoor, with cystitis in 1889. The cystoscope and microscope showed tuberculous cystitis and an ulcer near the right ureter. I did not note the orifice of the ureter—I had not learnt the value of the sign. I published the case.[5] Tuberculin was given and great relief of all symptoms was obtained.

Eighteen years later she returned to me with great pain in her *left* kidney. She had married and had children, but had never been well—always fretted with bladder irritation and pain. She was passing tubercle in the urine.

The *x* ray showed the right kidney to be a shell of putty—an obsolesced kidney, and yet this side was painless. The cystoscope demonstrated a closed right ureter, near which was the scar of the healed lesion I had detected in 1889. The left ureter was healthy, but around it were ulcerations—ureter catheterization of the left kidney showed tubercle.

I removed the right kidney shell[6] hoping to relieve the disease in the left. Unfortunately the patient continued to complain greatly about her bladder, and I scraped the areas involved in its left side. This made her worse until she micturated every few minutes. I had, I acknowledge, opened up fresh areas for the disease to attack. I now proposed to remove her bladder, and she accepted the suggestion gladly. After performing left ureterostomy her bladder gave her no trouble, and she had greatest comfort in that respect, so I left it. She was fitted with a loin urinal, and I learn died a year later—without doubt from disease of her left kidney.

References.

[1] Legueu, Traitement de la tuberculose urinaire, VII. International Congress of Tuberculosis, Rome, 1912. [2] *Ulceration of the Bladder*, 1900, p. 75. [3] Ibid. *Handbook of Clinical Cystoscopy*, p. 500, 1904. [4] British Medical Journal, January 27th, 1906. [5] *Handbook of Clinical Electric Light Cystoscopy*, p. 177. [6] British Medical Journal, July 3rd, 1909.

DISCUSSION.

Mr. Andrew Fullerton (Belfast) said: In this discussion I should like to say a few words on tubercle of the bladder. In the British Medical Journal of July 9th, 1910, I referred to a series of cases of tuberculous bladder and kidney, showing among other things that the disease is very frequent in Ireland. Out of a series of 400 cystoscopies, 24, or 6 per cent., were cases of tuberculous bladder and kidney. In a more recent series of 300 cystoscopies, tubercle of the bladder was diagnosed in 32, or over 10 per cent. In the combined series of 56 cases, the males and females were equally divided. The age at which the disease was most frequent was between 20 and 30, 21 out of the 56 being between these limits. Five cases occurred under 20, 16 between 30 and 40, 8 between 40 and 50, and 3 over 50. The youngest was 9, and the oldest 55. Tubercle bacilli were found in 11 out of 24

cases in the first series, and in no less than 26 out of 32, or 81 per cent., in the second series. In the latter more care and time were spent in the search.

In regard to the symptoms my cases have been very variable. In some the disease was quite unsuspected, as in the following case:

A young man, aged 29, who had had an attack of gonorrhoea two years before, was sent to me with what was thought to be posterior urethritis. He had to pass water every three hours during the day, but had not to rise at night. There was, according to his account, some scalding before making water, but no pain after. The duration of the symptoms was one year. His general health was good. The testis and epididymis on both sides were normal, and there were no renal signs or symptoms. Cystoscopic examination showed small, bright-red, slightly raised patches, resembling scattered spots of measles, varying from the size of a pin's head to that of a threepenny piece. These were scattered over the bladder walls, beginning just behind the trigone. The largest was on the anterior wall. The ureteral orifices were quite normal. Per rectum, there was nodular thickening in the left lobe of the prostate. The urine contained a few flecks consisting of epithelial cells from the bladder and an odd pus cell. Tubercle bacilli were found in the urine after a long search. This appears to have been a case of primary tuberculosis of the bladder. In a second case, a lady aged 43, there was no frequency and no pain referable to the lower urinary organs. She complained of some discomfort below the left ribs. Cystoscopic examination showed a slight degree of cystitis, and from the left ureteric orifice long ropes of pus were pushed out and deposited on the bladder wall. In this patient I removed a large tuberculous kidney on the left side.

In the majority of cases the symptoms were mainly those of an aggravated form of cystitis, frequency of micturition, pain, and the presence of pus and blood in the urine. The later symptoms were so severe as at once to suggest the probability of tubercle as the cause. In a fair proportion of cases renal pain, sometimes developing into renal colic, was present. In some the renal preceded the bladder symptoms, but in most the renal pain was a comparatively late occurrence. In a few cases the patient complained of pain in the opposite kidney. In some there was suprapubic and in some perineal pain. In about a third the affected kidney could be felt enlarged with or without tenderness. Thickening of the ureter, as felt per vaginam or per rectum, was present in a fair proportion. As I pointed out in my earlier paper, too much reliance must not be placed on enlargement of the kidney or thickening of the ureter. I have seen it when the enlarged kidney was the only kidney present, its fellow having atrophied after having been destroyed by tubercle.

One case, a boy, aged 14½ years, complained of pain at the lower part of the abdomen and of the passage of blood intimately mixed with the urine. The bleeding had ceased before I saw him. At no time had he frequency, urethral, penile or perineal pain. Tubercle bacilli were found in the urine and some few clumps of pus cells. Ureteral catheterization showed a lowered specific gravity on the left side (1010 as against 1015 on the right), but no pus cells were found in either specimen. I thought I could detect some thickening of the lower end of the left ureter per rectum. Here I presume that the left kidney is the seat of tubercle, which has not yet ruptured into the pelvis. In the light of the fact that neither albumen nor pus could be detected in the urine from either side, the subsequent history of this boy will be interesting.

Is tubercle of the bladder ever primary? In only 2 cases have I any evidence that the disease was not secondary, either to tubercle of the kidney or tubercle of the epididymis or testicle. One of these has already been referred to.

In the second case, a woman, aged 31, I found on cystoscopic examination evidence of tubercle of the bladder, and tubercle bacilli were found in the urine. The ureters were catheterized, and on both sides indigo carmine came through in about fifteen minutes. Pus was absent on both sides, and the specific gravity was 1025 in both specimens. In both, a trace of albumen and an odd hyaline cast were found. Neither ureter could be felt thickened per vaginam.

This appears to be a case of primary tubercle of the bladder. In 50 cases out of 56, so far as I can judge, the condition was secondary to tuberculosis of the kidney. In the two just referred to the condition may have been primary. In the remainder, the bladder was involved secondary to the deposit of tubercle in the epididymis and prostate. I must state, however, that in several cases of tubercle of the bladder which appeared to me to be secondary to disease of the epididymis and testicle I refrained from the use of the cystoscope, so that these are not included in my list. Even in the absence of signs of deposit in the epididymis or testicle, nodules were sometimes detected in the prostate gland. In these, the prostatic deposit would appear to be secondary to disease of the bladder and kidney.

Is the disease unilateral? Clinically, at any rate, the disease appears to be in the large majority of cases unilateral. The evidence afforded by the ureteral catheter in my cases has proved that pus on both sides is the exception. If urine of a good specific gravity, free from pus and albumen, is obtained from one ureter, I infer that that kidney is sound. I admit that this is not incontestable evidence, but I have acted upon it with success in my own practice. A trace of albumen in the specimen from the presumably healthy side has been present in a few of my nephrectomy cases which have completely recovered. Is this small amount of albumen (a mere trace) evidence of the presence of tubercle in the kidney? Without more *post-mortem* evidence I am unable to say.

My present position with regard to the use of the cystoscope in tubercle of the bladder is somewhat as follows: If the condition appears to be due to extension from the epididymis or testicle, castration with high division of the vas is carried out, and tuberculin is administered. If no improvement results, cystoscopy is used chiefly to ascertain the condition of the kidneys. I am a strong believer in the use of the cystoscope in cases of bladder tubercle, not so much for diagnosis of the bladder condition, but in order to ascertain which kidney is at fault, and if the second kidney is sufficiently sound to allow of extirpation of the diseased one. If, as in my own cases, tubercle of the bladder is in the overwhelming majority secondary to disease in the kidney, and if excision of the latter is the treatment most likely to cure the patient, it is necessary that there should be no doubt whatever as to which side to attack. The only certain method appears to me to be the ureteral catheter—an instrument I have used with great advantage in over 300 cases of all sorts of kidney trouble. In a bladder, ulcerated, bleeding, and secreting pus, the segregator is surely unreliable, and I should hesitate to depend on it to settle the fate of a doubtful kidney. Enlargement of the kidney and thickening of the ureter, if present, are valuable signs, but, as I have mentioned, the sound kidney may be the enlarged one, and a serious mistake may be made. In some, both kidneys may be enlarged, one being hypertrophied and the other extensively diseased. Pain may be entirely absent, or may be present on the sound side and absent on the affected side. This test, therefore, may fail. Cutting down on both kidneys is surely the last resort. Even by this method, unless both kidneys are laid open, a tuberculous focus may fail to be detected, as in a case referred to in my first paper. The use of the cystoscope without ureteral catherization is not, in my opinion, sufficient. The ureter on the sound side may appear healthy and yet its discharge, though free from pus or blood, may contain albumen and casts beyond what is safe. Again, I have seen cloudy urine issue from a ureter due to nothing more serious than the presence of a large amount of phosphates in suspension. A small amount of pus or blood in urine may be quite invisible by the cystoscope. Chromocystoscopy has failed me just when most required. Radiography cannot be relied upon to diagnose tubercle, at any rate in the early stage, before caseation and calcification have taken place. Under these circumstances I am driven to the use of the ureteral catheter. I admit the risk of instrumentation, especially if the disease is at all advanced, but if reliable information can be obtained which will benefit the patient, any slight risk that is incurred is justifiable. In all but one of my nephrectomies I have used the ureteral catheter. In all my unilateral cases the urine had a low specific gravity on the affected side, and in all undoubted cases of renal infection pus was present in the urine obtained from the affected organ. I except the case mentioned earlier in which the only signs were that the ureter was thickened and the specific gravity a little reduced on the suspected side.

In regard to treatment, I should like to speak of one complication after nephrectomy that has given me a good deal of trouble, and that is the persistence of a sinus in the track of the drainage tube. Why it occurs in one and not in another with exactly the same treatment is somewhat of a puzzle to me. I have divided the ureter with the cautery and have used easily absorbable catgut for all

ligatures. I have dissected away as much of the perirenal fat and fascia as I could with safety remove. I have removed the tube after twenty-four hours. Nevertheless, I still have a proportion of cases in which a sinus persists, perhaps for months.

Finally, in respect of mortality after nephrectomy, in my last series of 32 cases the affected kidney was removed in 8 with no deaths. One had a transient attack of albuminuria with oedema of the feet a year after operation, but has recovered. The second kidney was apparently quite sound in this patient at the time of operation. In my earlier series of 24 cases the affected kidney was removed in 14 cases with 3 deaths, making a total of 22 cases with 3 deaths, a mortality of 13 per cent. Of these nephrectomies I am responsible for 17 with 2 deaths, a mortality of 11.7 per cent.

Mr. E. Deanesly (Wolverhampton) said: The majority of cases when they first come under observation have symptoms referable to the bladder—namely, frequency of micturition with or without pain, and blood or pus in the urine, although these may be only found by the microscope in a centrifugalized specimen. Nearly all such cases are in the first instance treated as cases of cystitis, unless renal enlargement or renal pain is also present. Although a distinguished physician recently published an article on tuberculous kidney without mentioning the use of the cystoscope, I need hardly say that the latter is absolutely indispensable in all but the most obvious cases, such as those where a unilateral enlargement of the kidney is associated with unmistakable tubercle bacilli in the urine. The appearance of the ureteral orifice and adjacent part of the trigone in an advanced case of tuberculous kidney is usually characteristic and unmistakable. Moreover, in my experince, a tuberculous kidney which is in a sufficiently advanced stage to give rise to definite symptoms is almost invariably associated with definite and recognizable changes in the ureteral orifice. If to these are added the finding of pus by the ureteral catheter, the diagnosis is sufficiently established for all practical purposes. Like other cystoscopists, I have, however, met with difficulties and fallacies in certain cases. In the first case there may be definite changes in the mouth of the ureter of which it may be difficult to say whether they are due to tuberculous infiltration or to other causes. I have seen and sketched a ureteral meatus surrounded by most clear and definite ulceration of the mucous membrane. The only symptom was intensely frequent and somewhat painful micturition, with some discomfort in the loin on the side of the ureter affected. I found, instead of a tuberculous kidney as I confidently expected, a kidney packed with large and small calculi. The ureter itself was not enlarged, and was free from calculi throughout its course. Small calculi some little way within the orifice of the ureter may also produce changes in the appearance of the meatus which may be mistaken for tuberculous disease. On two occasions I have found typical ulcers surrounding a single ureteral orifice, and on exposing the kidney could find no trace of disease either in the kidney or in the ureter. It is possible that these were both cases of primary tuberculous ulcers of the bladder, but there was no focus in the testes or prostate, and I think it is more probable that both were really very early cases of tuberculous pyelitis. It cannot, therefore, be said that tuberculous kidney can be diagnosed with absolute certainty in all cases from the appearances seen within the bladder. If, however, the examination is carried a stage further by catheterizing one or both ureters, it is seldom that any practical difficulty remains. If the urine from the kidney supposed to be affected contains no pus, tubercle, except in the very earliest stage, can practically be excluded. If, on the other hand, it contains pus, that is, in my opinion, a sufficient indication for operation, provided that the pus is distinctly unilateral. As regards treatment, I think the majority of surgeons are now agreed that the best treatment for tuberculous kidney is to excise it, always provided that the opposite kidney is sound or sufficiently sound to maintain health by itself. This point is of such vital importance that for several years I have not been content with indirect evidence or even with such direct evidence as is afforded by catheterizing the kidney supposed to be sound. I do not undervalue the latter evidence, and in suitable cases where the bladder is not greatly implicated catheterizing the opposite ureter is usually easy, and in my experience attended with little risk. I prefer, however, in practically every case in which I propose to remove a tuberculous kidney to expose and examine the fellow organ through a lumbar incision. This is a very different and far more efficacious proceeding than a mere palpation of the kidney by passing the hand across the abdomen from the wound by which the affected kidney is to be excised. If the patient is placed in the prone position, in which I now perform all kidney operations, it is easy to expose first one kidney and then the other in a very short time, and with no disturbance of the operative field. I have carried this out in a large number of cases without any mortality and with the great additional sense of security from knowing the condition of the other kidney as positively as sight and touch can make it. I am aware, of course, that this does not positively exclude anything but gross anatomical disease, nor does it positively prove that the kidney so examined is perfectly functional; but it at least goes a long way in that direction, and the method is particularly valuable in those fairly numerous cases where involvement of the bladder makes catheterization of the ureters difficult. Moreover, many of these cases are very injuriously affected even by the manipulation and irrigations necessary for cystoscopy, and I have known deaths directly due to this procedure without any other operation. Mr. Fenwick has expressed his opinion that tuberculin, though sometimes highly beneficial in many cases of tuberculous kidney, never cures it. I think it is probable he is right; but I have certainly seen the most remarkable improvement from tuberculin, and it certainly often helps wonderfully in clearing up tubercle of the bladder after removal of the kidney. I had hoped to be able to report the present condition of a case of early tubercle of the kidney verified by microscopic section of a piece removed by operation. I treated her by tuberculin without removal of the kidney, and she was alive and well two years later, but I have been unable to trace her at the present time.

Professor Sinclair White (Sheffield) spoke of the difficulties in diagnosis. Tuberculous infection of one kidney alone was a condition seldom found. When tuberculosis of the kidney was diagnosed it was certain that tuberculosis was already present in other regions also. It seemed to him better to treat this form of tuberculosis on the expectant general lines as pulmonary tuberculosis was treated, by open air, good food, proper hygienic surroundings. He was not an advocate of operation unless the conditions were very obvious. If the kidney had been the seat of long-standing tuberculous disease it was a dangerous business to operate; he had seen the vena cava and the duodenum opened into.

Mr. Hey Groves (Bristol) asked if Mr. Deanesly could say in how many cases direct exposure of the opposite kidney had actually discovered disease which had not been demonstrated by other methods.

Mr. Temple Mursell (Johannesburg) said that in South Africa the open-air conditions were to all intents and purposes perfect, yet he had not seen recovery in a single case of renal tuberculosis by the expectant general treatment adopted for pulmonary tuberculosis. The cases improved greatly and the urinary symptoms subsided markedly, but actual complete recovery did not occur.

Dr. Darling (Lurgan) narrated the story of a case in which it appeared to him that complete cure followed the adoption of general and expectant treatment.

Mr. C. P. Childe (Portsmouth), in speaking of the technique of nephrectomy for tuberculous kidney, thought that it was better not to drain, because of the risk of persistent sinus. In his experience immediate closure of the wound resulted in healing by primary union.

Mr. Hurry Fenwick, in reply, said, in answer to Professor Sinclair White, that he began the discussion with the two questions, "Do we find tubercle in the kidney as the beginning of the trouble?" and "If so, is surgery the only means of combating it?" He had tried the expectant method of treatment. Some of these

patients lived as long as thirty years after the onset of the disease. But did the expectant treatment help? These people lived in spite of the doctor, who had no right to take credit to himself. Tuberculin should not be used in all cases, and was not administered if the ureter were blocked. He did not attach any value to the employment of the opsonic index. In regard to the plan adopted by Mr. Deanesly, who recommended examination by inspection and palpation of the other kidney through a lumbar incision, he had to point out that many of the tuberculous kidneys illustrated by him would have appeared and felt to be quite healthy, as the lesions were central, and there was a distinct layer of apparently sound cortex. Mr. Deanesly's method, therefore, was not efficient. The surgeon should be able to tell whether the other kidney was infected or not by other methods—cystoscopy, examination for thickened ureter per rectum or per vaginam. He agreed with the suggestions that it was best not to drain the wound after nephrectomy. It appeared as if the least infection resulted in the formation of a sinus, so that the kidney should be removed without opening into it, and the ureter —if thickened the distal end was scooped out for 2 or 3 in. and sterilized—ligatured and dropped back into the wound. In all cases operated on he regarded the thickening of the ureter as the diagnostic feature of first importance. He might operate even without cystoscopic examination. If cystoscopy were done, he would do it at the same sitting as the operation.

A TRANSARTICULAR METHOD OF OPERATION FOR CERTAIN DIFFICULT FRACTURES NEAR THE KNEE AND ELBOW.

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UP to a few years ago the joint cavities of the body were considered almost beyond the range of surgery on account of the risks of sepsis involved in opening them. Even at the present day no surgeon can open one of the larger joints without a feeling of grave responsibility, but it is nowadays very rare for any evil consequence to follow, provided only that all possible aseptic precautions are taken, and that the operation is carried out with reasonable celerity, without unnecessary handling of the structures of the joint. Accordingly, it seems to me that the time has come to reconsider surgical operations for certain fractures in which difficulties of access prevent accurate reposition of the fragments.

The fractures to which I refer are those of the lower end of the humerus and of the lower end of the femur, and more especially fractures in these situations involving the neighbouring joints. The type of such a fracture is the T-shaped fracture described in the textbooks. After such an accident, even when the injury is treated by an open operation, the shape of the articular surface of the broken bone is frequently so altered and deformed that the movements of the joint are greatly impaired. In the case of the elbow particularly you are all familiar with cases in which, despite early passive movements of the joint, a bond of fibrous tissue forms between the intra-articular portion of the line of fracture through the humerus and the contiguous surface of the ulna. Attempts to break down this adhesion may fail or may succeed only in refracturing the humerus, and the joint has to be excised. I believe that the present state of surgery justifies a bolder means of obtaining free access to the fracture and to the injured articular surface, so that its fragments can be accurately and precisely adjusted with the aid of vision. The only means available for securing such inspection is the free opening up of the joint into which the fractured bone enters. Such a method of exposing the fracture may be distinguished as *transarticular*, and in this paper I propose to consider the steps of the necessary operation in the case—first of the femur, and secondly of the humerus.

The following case illustrates the difficulties which in a fracture of the lower end of the femur may demand the employment of the transarticular method as the only means by which they can be overcome and the function of the joint restored.

The patient, a boy aged 9, was entangled in the wheel of a moving cab, and was admitted into the Middlesex Hospital with a transverse fracture of the right femur in its middle third and a separation of the lower epiphysis of the left femur. The end of the left diaphysis was prominent under the skin in the popliteal space. The fractured right femur was treated by extension and a long Liston splint, and good union resulted.

The left limb was at first treated by flexion of the knee, maintained by a figure-of-eight bandage around the thigh and leg. A skiagram showed that the position of the epiphysis remained deplorable. Under an anaesthetic an incision was made along the outer side of the thigh just above the knee, and an attempt was made, apparently with partial success, to lever the epiphysis into position. The limb was again put up in flexion with plaster-of-Paris. A skiagram taken eight days later showed, however, no improvement in the position of the fragments, and a senior colleague suggested excision of the joint as the best course to pursue. Ten days after the first operation, on October 26th, 1907, a U-shaped incision was made across the front of the lower end of the femur, its convexity crossing and dividing the ligamentum patellae just above the tubercle of the tibia, while the vertical limbs of the U extended up over the vasti muscles. The incision was deepened to the bone, cutting through the capsule of the knee-joint and the muscular fibres of the great extensors, and a U-shaped flap, including the patella, was turned up so as to expose the whole of the knee-joint from the front.

Fig. 1.

The line of fracture was found to follow the epiphysial plane on the outer side, but towards the inner side it ran obliquely through the lower end of the diaphysis. There was much difficulty in getting the epiphysis into position, and great force had to be used to effect this object. The posterior aspect of the lower end of the diaphysis was found stripped of periosteum for a considerable distance upwards. The epiphysis after replacement was fixed in position by a screw introduced above the external condyle, and passing obliquely downwards and inwards from the diaphysis into the epiphysis. The ligamentous structures which had been divided were then carefully sutured, and the limb was placed on a back splint in a position of slight flexion.

Convalescence was uninterrupted. The boy was discharged, with the limb in plaster, seven weeks after the operation, and, when seen three months afterwards, walked as well as before the accident. There was no apparent weakness of the left knee, and its movements, except for a slight limitation of flexion, were perfect.*

When the patient was last seen, in the following October, slight genu valgum had developed on the left side, and the limb was half an inch longer than the right one. The screw had remained in position. Evidently the inner side of the epiphysis was growing more rapidly than the outer side, a result to be ascribed rather to the accident than to the operation.

The recital of this case, and the illustration which I show, absolve me from the need of wearying you with any further description of the operative details. It is, however, to be noted particularly that the lateral ligaments of the knee-joint are not in any way interfered with.

Turning now to the operative treatment of fracture of the lower end of the humerus, the methods which have been used are: (1) Longitudinal lateral incisions over each condyle, a method which gives imperfect access, but one which may suffice in the simpler cases. (2) A vertical median incision over the olecranon process, as in excision of the elbow. The triceps tendon is split vertically, and by means of the periosteal elevator is separated from the ulna, so as to reach the fracture. It is evident that this is an unsatisfactory means of reaching the fracture, for the operator is working through a sort of buttonhole in the rigid triceps tendon, and is embarrassed by the olecranon process, which hides the humerus.

In my opinion, the method by longitudinal lateral incisions should be always employed where an operation is necessary, for it can be converted in case of need into the

* This case appeared in the *Transactions of the Royal Society of Medicine*, Clinical Section, October 9th, 1908.

complete transarticular incision illustrated in Fig. 2. If difficulties arise, the operator should not hesitate to proceed to the complete transarticular operation. It might be objected to the method that it involves serious interference with the ligaments of an important joint.

Upon consideration, however, it will be seen that this is not the case to any appreciable extent. The strong ligaments upon which the functional integrity of the elbow depend are the anterior and the two lateral ones. These remain untouched, and the only one divided is the posterior, which is very thin and unimportant. The division of the triceps takes place in the direction of its fibres, and cannot interfere with its subsequent function. The only important structure divided is the olecranon process of the ulna, and the results of operation for fracture in this situation show that this solution of continuity is very unlikely to impair the action of the elbow-joint, especially when made by a clean raw cut and immediately wired. It is to be noted that the large nerves are not to be exposed in the floor of the incision, for such exposure may lead to irritation and subsequent cicatricial pressure upon them. In order to avoid exposing the ulnar nerve, the inner limb of the U-shaped incision must be kept well to the outer side of the line of the nerve.

Fig. 2.

The following case, for the notes of which I am indebted to my able house-surgeon, Mr. L. H. McBride, illustrates the employment of the transarticular method in a difficult fracture of the humerus.

G. H., a boy aged 12, on June 10th slipped on a piece of orange peel, injuring the right elbow. On examination a fracture of the lower end of the humerus was found, the lower end of the upper fragment protruding markedly forward. There was very little swelling, but much discoloration of the skin over the front of the elbow. Next morning, *x*-ray examination showed the lower epiphysis to be completely detached and displaced considerably backwards. Three unsuccessful attempts were made under anaesthesia to reduce the displacement and to get apposition of the fragments. The patient saw Mr. Handley on June 17th, and reduction by operation was advised. On June 21st, at the Bolingbroke Hospital, open ether was administered by Dr. C. J. Martin, and a horseshoe-shaped incision was made, commencing about 2 in. above each condyle, and crossing the back of the forearm just below the base of the olecranon process. The skin flap was dissected up for an inch, and the olecranon process and posterior capsule of the elbow-joint were cleared and defined, special care being taken to avoid injuring either the ulnar nerve and ulnar recurrent artery on the inner side or the musculo-spiral nerve on the outer side high up. The olecranon process was then divided with an Adams saw at its base. The vertical limbs of the incision were deepened to the bone through the muscular substance of the triceps. The detached olecranon, with the triceps attached to it, was turned up, and the posterior fibres of the capsule were carefully divided. This gave an excellent view of the posterior aspect of the humerus at its lower end, and the seat of fracture was rendered easily accessible. After some difficulty the fragments were levered and manipulated into position, and as there was no tendency for displacement to recur after reduction, no mechanical appliance in the way of wire or plates was thought necessary. The detached olecranon was replaced and kept in position with a stout silk ligature instead of wire. The capsule was stitched with fine catgut, and the skin margins united with interrupted Pagenstecher sutures. The incision was dressed with xeroform and sterile gauze, and the arm put up at the side in semiflexed position without splint. The wound healed by first intention, and the stitches were removed on the tenth day, and gentle passive movement commenced. On July 14th the silk suture in the olecranon ulcerated through the skin, and was removed. There was no suppuration, and the union of the olecranon was firm. The patient can now extend the arm to about an angle of 120°, and the movement continues to improve. It is, of course, still too early to speak of the final result of this case, but it appears certain that the necessity of excising the elbow has been averted.

In cases where a fracture of the lower end of the humerus involving the joint has been followed by firm and unyielding fibrous ankylosis of the elbow, my transarticular method of operation will, I am convinced, frequently succeed in restoring the integrity of the joint, a result not attainable by any other method with which I am acquainted.

In conclusion, I would emphasize the fact that I do not regard the transarticular operations here described as suited to the simpler cases of fracture of the lower end of the humerus and femur, nor is my experience of them sufficiently extensive to warrant the expression of a general estimate of their value. The transarticular method should be held in reserve for the more difficult cases. But in order that it may, if necessary, be employed, the incisions of access, in all cases of operation for fractures of the lower end of these bones, should correspond with one or both of the vertical limbs of the U-shaped transarticular incision.

DISCUSSION.

Mr. H. A. BALLANCE (Norwich) could not agree with some of Mr. Handley's conclusions. He did not believe that separation of the lower epiphysis of the humerus pure and simple did occur, but he did believe in the comparative frequency of fracture at the lower humeral end. In that fracture he was a strong advocate of operative treatment; the ordinary treatment by extension or by acute flexion was not satisfactory. He had operated by both the lateral incision and the median posterior incision over the joint. He passed a screw through the lower fragment up into the upper, the head of the screw being left in the outer condyle. By the median incision he thought a perfectly adequate view of the fractured surfaces could be obtained. In forty-eight hours after fracture it was possible to replace the fragments without mechanical appliances, as there was sufficient irregularity of the surfaces to keep them in position. In cases operated on later he required to insert one or more screws. He thought that in fractures in this situation the non-operative method should be given up; the amount of swelling made it absolutely impossible to make certain of anatomical reposition.

Professor RUSHTON PARKER (Liverpool) thought that it was not sufficiently well known to what extent the method of treatment by acute flexion was beneficial in fractures in the region of the elbow-joint. In his own practice acute flexion was accomplished by slinging the arm by the wrist to the neck, keeping it in that position without looking at it and without moving it at all. If early passive movements were indulged in the result was a stiff elbow.

Mr. SAMPSON HANDLEY, in reply, thought that stiff elbow would be a common result of Professor Rushton Parker's treatment. He did not wish it to be understood that his operation was to be regarded as a routine method; it was a method to be held in reserve for those very obstinate cases of which he had had experience.

EXCISION OF A PILE AREA BY A SIMPLE AND BLOODLESS METHOD:

THE END RESULTS OF FIFTY OPERATIONS.

By ALEXANDER DON, C.M., M.A., F.R.C.S.Edin.,
Dundee.

IN 1908 I published a simple method of removing the whole varicose area, and I have been able to collect the end-results of fifty of these cases.

I do the operation, as I shall describe it, practically in every case, removing the whole lower 1½ in. of the mucosa with the varicose, or communicating, venous radicles underneath it. This practically assures the removal of all the dilated veins, and of those that might later become dilated, if the cause continued to operate.

Previous to my adopting this method, it was no uncommon experience to have a patient return, complaining that his piles had come back, and while it is easy to explain such an occurrence, it is not very satisfactory to either patient or surgeon. And many other patients do not give us an opportunity of explaining, but go to a different surgeon in the hope that he may do the operation better.

Whitehead's operation is the only one I know of that aimed at removing the whole pile area, but it is not easy

to perform properly, and, even if the haemorrhage is not alarming, asepsis is seldom attained, and bad after-results —such as incontinence, stricture, etc.—have made surgeons hesitate to perform it. But we do a circular suture of other parts of the gut, without producing stricture, and over-dilatation of the sphincter will produce incontinence for a considerable time and may require surgical treatment for its cure.

Every other operation, so far as I know them, removes the affected veins alone, or these *plus* an indefinite area of mucosa gripped in the clamp or other instrument used. Many arguments are used to uphold these operations, but they mainly resolve themselves into fear of stricture, if the whole mucosa is removed from the bowel in the form of a ring. If any operation can be devised that will spare the mucosa or parts of it, and still remove all the venules in the pile region, then it could, I admit, be performed with less risk of stricture, if asepsis were not attained; but we all operate aseptically nowadays, and it is difficult to soil the wound by the method I use.

The results of pile operations are perhaps less difficult to trace than are the results of other operations, partly because the effects of piles are more objective, persistent, and constant, and because the patient in hospital work always comes back to the original operator both by the rule of the institution, and by the desire of one's colleagues. Many of my cases came back to report, and others I have managed to trace to make up a series of 50 cases

1. I have never had to operate for piles a second time after doing this operation. I have only once had a complaint of insensibility, and a persistent mucous discharge. In that case—a private one—the patient was allowed to come out of chloroform too soon, and, contracting the sphincter tightly, tore out some sutures and prevented the accurate closure of the wound. It turned out later also, that he had a polypus 6 in. up the bowel, which accounted for the mucus and perhaps for the piles, and certainly for a good deal of pain and straining

2. There never has been any stricture, and personally I cannot see how there even can be, if the mucous membrane only has been removed, and if the wound has healed even with a little sepsis. Where deeper structures are mangled, or where the sphincter has been badly torn, some stricture is certain to follow.

3. I do not wish to open up the question of dilatation or not of the sphincter in pile operations further than to say that at first I dilated till I felt the sphincter give way, and I often had much subcutaneous haemorrhage, showing as a dark area for 4 to 6 in. round the anal opening with a good deal of pain and sometimes a period of a week or two of loss of complete control, but recently I have dilated only sufficiently to get a good view of the piles, and to get them easily down, and since then I have had no mishap of any kind.

4. In two cases only was there any haemorrhage. One where I removed a large ulcer which was suspected to be malignant, though I found it not to be so, and where there was much oedema. I tried to ligature a vessel and the ligature slipped off, but the vessel seemed to have stopped bleeding. I had to tie that vessel some hours later. The other case was in a woman five months pregnant, who was sent in to me for operation. I removed the piles, and she left the hospital on her own accord on the fourth day. She came back about a month later saying the wound had never healed and that she had lost a lot of blood. There was nothing to be seen wrong with pile region, and I discovered that she had been drunk almost continuously since she left the hospital and had always had diarrhoea. I do not attribute the haemorrhage to the operation.

The operation is done as follows:

If there is time the bowels are cleared by an aperient, and on the morning of operation by an enema. The operation may be done by local, spinal, or general anaesthesia, but, for obvious reasons, in this country I prefer the general.

The patient is put in the gynaecological position, the anus being brought level with the surgeon's chest. The area for 6 in. round the anus is shaved and sterilized with iodine, or, as I prefer, is cleaned with depilatory.

The sphincter is dilated moderately—always short of tearing. The cork, of conical shape and suitable size, with the screw handle is pushed inside the bowel. The pink mucosa above the pile area is easily distinguished from the deep blue congested piles or venules of the pile area, and this mucosa is caught at its lower border by Kocher's or other catch-forceps. About six pairs are needed.

The cork is now pulled down by means of the screw, and it comes against the points of the forceps. The forceps and the screw are taken in the left hand and six hare-lip pins are stuck into the cork, entering at the white line and passing through the front of the sphincter. A piece of rubber tubing or catapult elastic is now wound twice round between the pins and the body. It fits into the groove in the cork and is fixed by a pair of catch-forceps.

All the other forceps and the screw are now removed and the whole area wiped dry and again swabbed well all over with iodine spirit. There is no danger during the remainder of the operation of fresh infection, at least from the bowel. Beginning ¼ in. inside the white line, the mucosa, with the vessels, is dissected off, leaving in the depth of the wound the circular fibres of the sphincter, and on the inner aspect ¼ in. of healthy mucosa.

At this point the elastic ligature may be taken off and any bleeding vessel ligatured, but I oftener than not put in the suture before removing the tourniquet. The suture is a continuous buttonhole one of chromicized catgut, and picks up first skin, then sphincter at the centre, and then mucosa or vice versa.

If the tourniquet has not been previously removed, any bleeding area may be now secured by a mattress-suture. This suture also helps to steady the circular one, and two or three may be put in. The wound is again wiped with spirit solution, the screw inserted into the cork, the pins removed, and lastly the cork. I always push a ½ in. roll of gauze into the canal. It arrests bleeding and steadies the wound, and may be taken out by the nurse before the patient is quite conscious, for I give a hypodermic of morphine immediately on the patient's return to bed. The bowels are moved on the sixth day, and the patient leaves the hospital on the tenth. There is no difficulty in doing the operation, except in those cases where there has been a good deal of inflammation and cicatrixation, and where the varicose area is fixed to the sphincter; but here piles are not the only trouble to be dealt with.

THE SHAPE OF THE KIDNEY IN CERTAIN URETERAL OBSTRUCTIONS.

By R. A. BICKERSTETH, M.A., M.D.Camb., F.R.C.S.Eng.,
Surgeon, Liverpool Royal Infirmary.

SOME ten or twelve years ago, when I first became specially interested in the pathology of blocked or partially obstructed ureter, nothing impressed me so much as the poverty of our museums in specimens illustrative of this condition and the difficulty of obtaining useful information from such few specimens of the kind as could be found in our collections.

The reason for this is easy to understand. Large hydro- or pyonephrotic tumours which come to operation are almost invariably, and necessarily, very much damaged and torn in our efforts to remove them: further, to reduce their bulk during the course of our operation, we either purposely incise them or we make free use of the aspirator to withdraw their contents.

As a result, the specimen obtained at the close of an operation is generally a small ragged mass of collapsed cyst wall, and in this state it bears little or no resemblance to the sometimes enormous tumours which such kidneys form while still in the body. If thought to be worth preserving at all, these specimens are in the ordinary course sent over to the pathological department, and reaching it towards the close of the day, are there placed by an assistant in a jar of some preserving fluid, to be examined later on, and at his leisure, by the curator. The most painstaking and conscientious curator in the world can make little or nothing of a specimen which reaches him—hardened—in this condition.

If anything at all is to be learnt from these operation specimens, it is essential that they should be examined while still absolutely fresh, if possible they should be fully examined either by the surgeon himself, or by someone else fully conversant with the clinical history of the case and present at the operation

For many years I have been in the habit of carefully examining all such specimens myself, whenever possible, during the evening of the day of the operation. My earlier attempts at preserving specimens were by a process somewhat akin to "bird-stuffing," packing the cavities with successive pieces of sponge, and sewing up the rents over these as best I could. But though I have saved many valuable specimens by this method, it is, of course, obviously open to the objection that the final shape of the preparation depends too much upon the imagination of the "stuffer." I soon realized that the only reliable method of reproducing the exact shape of these large hydro- or pyonephrotic tumours was to make them watertight in some way, and then to gently distend them with fluid.

The suturing of large rents and punctures in these soft thin-walled specimens, so as to make them watertight, at first proved to be a very difficult matter, but with patience, and by using the very finest silk and needles, I learnt before long that I could generally save specimens which at first sight appeared to be beyond hope. And it was worth the trouble.

Having once made the specimen watertight, the next step is to gradually distend it with water, noting (and drawing) the various shapes assumed by it in different degrees of distension.

The first step, in any specimen to be permanently kept, is to distend it with hardening fluid at a pressure given by 3 or 4 in. of fall, the specimen at the same time floating in a basin of the same fluid; in twelve hours it can be opened up or cut about to any extent, while still retaining its "distended" form and size.

I have placed in our annual museum some twenty specimens of pyonephrosis of various degrees preserved in this way; some twelve of these are calculus cases, and the remainder hydronephrosis from other causes, which had become definitely pyonephrosis at the time of their removal.

I propose in this paper as briefly as possible to put before you such impressions as I have gained from a careful examination of these specimens.

Formerly all patients suffering from the clinical symptoms which are now recognized as being caused by blocked or partially obstructed ureter. were supposed to have "stone."

We rightly send all such cases to the radiographer, and in a minority, perhaps, but still in a considerable proportion of these cases, he informs us that no stone is present. As surgeons we may ask ourselves, What is the commonest pathological condition found to account for such symptoms in the absence of a calculus? My answer to this question is that, so far as my specimens removed by operation are concerned, on comparing them one with another, I find that they nearly all present certain characteristic and distinctive features in which they closely resemble one another; they tend, that is to say, to fall all into the same class, to assume a common type. The chief characteristics of this type are:

1. An enormously dilated, soft, thin-walled pelvis.

2. The body of the kidney enlarged somewhat and hollowed out, forming the "boat" or "canoe-shaped" kidney of Mr. Hurry Fenwick. The cortical tissue of the kidney seems rarely to be thinned out to the same extent as it often is in calculus cases; in the largest specimens of the class at present under consideration it seems to be generally the thin-walled, yielding pelvis—rather than the body of the kidney—which bears the brunt of the enormous distension which often occurs.

3. As regards the ureter in these specimens, it takes origin at the lowest part of the dilated pelvis, and runs at first upwards, apparently in the substance of the pelvic wall for a variable distance—may be 3 or 4 in. in a large specimen; from here on the ureter becomes free, and we generally find a short, freely movable stump of ureter before reaching the point where it was cut through at the operation.

Fig. 1 is a diagram representing the general outline of one of these kidneys. An examination of the shapes assumed by some of these specimens under varying degrees of distension is particularly instructive, provided that the specimens are still perfectly fresh. When barely filled with fluid, and still quite flaccid, one or two of them closely resembled in shape a normal kidney, in which the pelvis was, however, larger than natural.

I have endeavoured in Fig. 2 to show diagrammatically in a sort of composite picture, the changes in shape produced by increasing degrees of dilatation.

A part of the pelvic wall (Fig. 2, A—B) is evidently inelastic and undistensible, and when once this part is fully stretched the whole of the subsequent enlargement takes place at the expense of other parts of the pelvic wall. Watching the effect produced one cannot help being forcibly reminded of that unilateral bulging which occasionally takes place on the inner tube of a motor or bicycle tyre. An admirable paper by Mr. Hurry Fenwick and a lucky specimen which I was fortunate enough to obtain about the same time provided me with the explanation of what I had observed. The unyielding portion of the pelvic wall is supported by a band of connective tissue, in which run a large branch or branches of the renal artery.

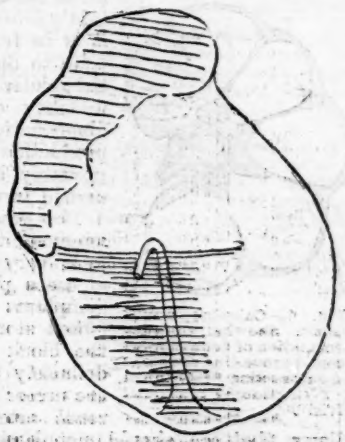

Fig. 1.—Diagram showing general appearance of hydronephrosis due to "kinked ureter."

Fig. 3 is an attempt to represent diagrammatically my explanation of the mode of production of hydro- or pyonephrosis in these specimens—by kinking of the ureter over a branch of the renal artery. And I believe that this is the explanation of the condition found in many of my specimens, and in a large majority of all cases of hydro- or pyonephrosis depending on causes other than stone.

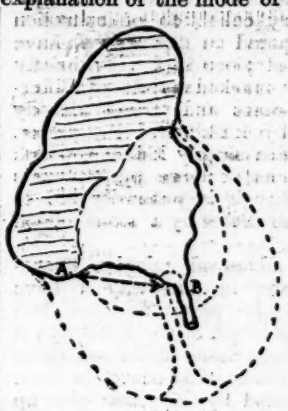

Fig. 2.—Diagram showing three successive shapes assumed by specimen of hydronephrosis under different degrees of dilatation.

My own impressions are based entirely upon specimens obtained by operation, and upon facts observed during operations in these cases. I am well aware that such evidence is in itself insufficient unless supported by fuller and more complete evidence, such as can only be obtained in the dead-house or dissecting room, and I am therefore delighted to observe in our annual museum an admirable and complete specimen lent from the collection of the Royal Free Hospital, which illustrates this condition.

I draw your attention specially to this specimen, which comprises portions of the aorta and vena cava, and shows very beautifully how hydronephrosis may be produced by "kinking" of the ureter over a renal vessel.

Time does not permit me to go at any length into the question as to whether this offending artery in these cases is always an abnormal one. Professor A. M. Paterson assures me that no artery in the body is so subject to variations and abnormalities as is the renal artery. It is by no means an uncommon thing to find a branch passing to the kidney behind the pelvis or ureter, and small

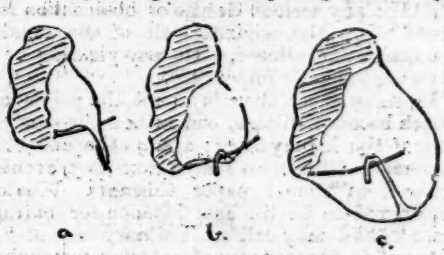

Fig. 3.—Showing three successive stages in the production of hydronephrosis by "kinking" of the ureter over a branch of the renal artery.

separate branches are occasionally found reaching the lower pole of the kidney direct from the aorta itself. These must of course always be regarded as abnormal vessels; I can only say that while in some of my specimens the offending artery is certainly *behind* the ureter, in others it is in front of it. I have no time to discuss the question of the relative importance of undue mobility of a kidney, and an abnormally placed artery, in the production of this condition; probably both factors are concerned in varying degrees.

Fig. 4.—Calculus pyonephrosis. Showing tendency to formation of dense fibrous tissue surrounding the stone and contracting firmly upon it. ("Contracted cicatricial pelvis.")

The practical point for us as surgeons to remember is—that in a very considerable number of cases presenting the clinical symptoms of ureter obstruction (when stone has been excluded) the block will be found to be definitely due to "kinking" of the ureter over a branch of the renal artery. Granted this, it follows that we should not hesitate to explore such cases in their earliest stage, guided by symptoms alone, and not waiting until the appearance of a tumour makes it clear that irreparable damage has already been done to the kidney. Whenever we find a "kink" such as I have described, if the destruction of the kidney is not already too far advanced, the right treatment is to divide the offending artery between two ligatures.

While dealing with the subjects of hydro- and pyonephrosis, as illustrated by my collection of operation specimens examined and prepared in the way I have described, it may not be out of place if I very briefly draw attention to certain very marked points of difference between the calculus cases and those already described as being produced by kinking of the ureter. By calculus cases I do not mean simply kidneys which contain a calculus, but specimens of large pyonephrotic tumours in which the pyonephrosis is primarily due to the blocking of the orifice of the ureter by a stone lodged in the pelvis.

In nearly all specimens of advanced calculus pyonephrosis examined and prepared in the way I have described, I have noted that the pelvis as such had practically ceased to exist. The hilum of these kidneys is occupied by a dense mass of fibrous tissue in the middle of which lies the stone. I take it that what occurs in these cases is that the irritation caused by the stone sets up changes in the parts immediately surrounding it which lead to the formation in them of much new formed inflammatory fibrous tissue; this shrinks and contracts upon the stone in such a manner, as finally to constitute a serious and important factor in the causation of obstruction to the outflow of urine.

There is no doubt about the denseness and toughness of the mass of tissue which immediately surrounds the calculus. From the outside the hilum usually appears to be retracted, and I find myself constantly using in this connexion the term "contracted cicatricial pelvis." By the time any serious degree of obstruction is produced in these cases, the original wall of the renal pelvis is so thickened and altered, that any yielding or dilatation on their part is quite impossible.

In these cases, then, it is not the pelvis of the kidney which becomes dilated, but rather the soft yielding structure of the kidney itself; and as the calices become more and more dilated, so the cortex may eventually become reduced to almost paper thinness. Whatever may be considered to be the best incision for extracting a stone from what I may call an ordinary case of "stone in the kidney," in those cases of calculus pyonephrosis forming large tumours, it is well to remember that the stone cannot be removed by a simple incision in the pelvis, because the pelvis itself, in its original form, is no longer existent. Such kidneys, if not removed, require in any case to be opened freely and drained, and an incision along the free border of the kidney not only accomplishes this object, but affords the most suitable and convenient approach for the removal of the stone.

EXCISION OF GASTRIC ULCER.

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It will be generally agreed that the operation of gastro-enterostomy is most satisfactory for the majority of those cases of ulcer of the stomach or duodenum which require surgical treatment. When, however, an ulcer is situated on the lesser curvature or in the body of the organ the results of the operation are apt to be disappointing. Attempts have been made by surgeons to obtain more satisfactory results by excising the ulcer, and the author's experience of the operation is such that it seems desirable to record the cases.

The cases referred to below consist of all those in which excision of an active (simple) ulcer of the lesser curvature or body of the stomach has been performed. They do not include any cases of ulcer at the pylorus treated by partial gastrectomy or cases of malignant disease. Further, cases of hour-glass contraction produced by the healing of an ulcer and treated by gastroplasty, gastrectomy, gastro-enterostomy, etc., are not dealt with. I have not included cases of free perforation of an ulcer, as these are in a different category. Naturally the number of cases form a very small proportion of all the operations done for simple disease of the stomach, particularly as many ulcers in the situations referred to have been treated by gastro-enterostomy.

I will say nothing of the symptomatology and diagnosis of these ulcers, except that the surgeon who prides himself on his ability to locate the position of an ulcer in the stomach is likely to meet with very frequent disappointments. As a rule it is impossible to say before opening the abdomen exactly which operation is most suitable to the case.

It is known that an ulcer at or near the pylorus will almost certainly heal after a gastro-enterostomy has been done. Of the results of the same operation in the case of an ulcer of the body of the stomach we are not so assured. Healing must occur in some cases, as there is perfect relief after the operation, but in a proportion the symptoms persist and evidences of continued active ulceration are manifest. Mr. Gilbert Barling has recorded four cases in which fatal haematemesis occurred from such an ulcer after gastro-enterostomy. If gastro-enterostomy is to be done the aperture must be made well to the cardiac side of the ulcer. If not, stenosis may follow healing of the ulcer, and produce an hour-glass stomach with the opening into the pyloric pouch, as in the following case:

M. S., aged 37, female, had suffered from symptoms of gastric ulcer for many years. Seven years ago a gastro-enterostomy was performed by Mr. X. The patient was relieved from her symptoms for some time, and then had occasional attacks of vomiting and abdominal pain. During the last two months the pain and vomiting became more frequent and more severe, and the patient had lost weight considerably. *X*-ray examination after a bismuth meal showed a condition of hour-glass contraction of the stomach.

February 26th, 1912. Abdomen opened by incision in the middle line. The stomach was found to be divided into two pouches by the contraction of an old ulcer on the lesser curvature near the cardiac end. There was a good patent, no-loop, posterior gastro-enterostomy opening into the pyloric pouch, the opening between the two pouches being narrow. A wedge of the narrow isthmus was excised, and the edges sutured in such a way as to restore the continuity of the stomach. The patient made an excellent recovery; she has lost all her symptoms, and is gaining weight and strength.

Occasionally it is necessary to perform an anterior gastro-enterostomy. The lesser peritoneal sac may be obliterated, the ulcer extensive and adherent, and the condition of the patient such that the simplest possible operation must be performed. In some cases the results have been good, but the risk of jejunal ulceration is considerable, and the operation cannot be recommended.

Excision of the ulcer would seem to be the ideal operation. The diseased part is freely removed, and the possibility of secondary malignant disease is avoided. There is no likelihood of contraction producing stenosis of the stomach. There is no necessity for a gastro-enterostomy, and therefore no risk of jejunal ulcer. The actual operation may be one of the simplest if the ulcer is situated on the anterior wall of the stomach and has not contracted adhesions to other organs, or it may be one of great difficulty. A large ulcer which has perforated and is intimately adherent to the pancreas, the liver, and the abdominal wall

will tax all the resources of the surgeon. The excision of a wedge of the stomach, the base at the lesser curvature, including the ulcer, will be the operation usually practised (Fig. 1). The affected portion of the stomach is excluded

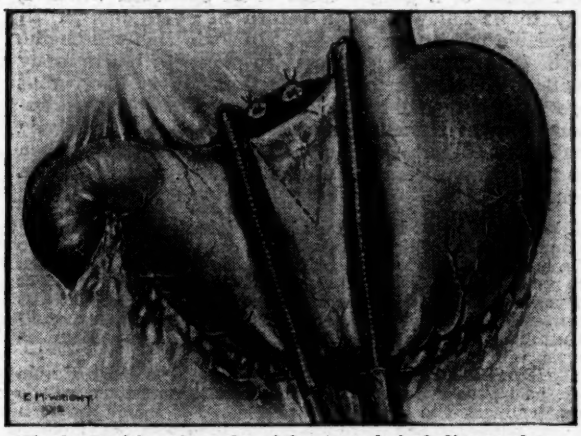

Fig. 1.—Excision of a wedge of the stomach, including an ulcer.

by clamps passed through openings in the gastro-hepatic and gastro-colic omenta, the wedge excised, and the form of the stomach restored by three layers of suture, one of fine catgut in the mucous membrane, one in the muscular coat, and a continuous Lembert sero-muscular suture of celluloid thread. The clamps are removed, the openings in the omenta sutured, and the abdomen closed. I have usually inserted a drain for forty-eight hours.

An ulcer on the posterior surface of the stomach may be removed through an incision in the anterior wall—trans-gastric excision—but I have not seen a case for which this method seemed suitable. The cases in which excision of an ulcer was performed may be divided into two classes.

I.—*Cases in which the Result was Satisfactory.*

L. F., female, aged 28, was admitted to the Leeds General Infirmary on December 10th, 1909. She had suffered from symptoms of gastric ulcer for twelve months, pain coming on about half an hour after food, associated with and relieved by vomiting. No haematemesis had ever occurred. A fortnight previous to her admission she had a very severe attack of epigastric pain, with collapse, from which she recovered quickly. She was seized with a similar attack on the day of her admission. The abdomen was opened the same day, and a small ulcer found on the anterior wall of the stomach, which was evidently on the point of perforating. The ulcer was excised, the stomach sutured, and the abdomen closed without drainage. The patient made a perfect recovery, and has had no further gastric symptoms (last seen July 21st, 1912).

A. W., female, aged 39, admitted to the Leeds General Infirmary on October 10th, 1910. She had suffered from symptoms of chronic gastric ulcer for many years; lately the pain had been very severe, and she had had one attack of profuse haematemesis.

October 12th. The abdomen was opened, and a large ulcer found on the posterior surface of the stomach, near the lesser curvature. The ulcer was very firmly adherent to the pancreas, and was separated with great difficulty and some troublesome haemorrhage. Wedge-shaped excision was performed, and the stomach wound closed by three tiers of suture.

The patient made a good recovery. She is now free from pain, and there has been no return of vomiting or haematemesis. She has not gained much weight, and complains of some flatulence. The result cannot be considered entirely satisfactory.

E. A. S., female, aged 37, admitted to the Leeds General Infirmary on October 15th, 1910. Many years' history of chronic ulcer of the stomach, with latterly severe pain after food and wasting. Laparotomy revealed a round ulcer on the lesser curvature and anterior surface. Wedge-shaped portion of stomach containing the ulcer excised and stomach sutured with three layers of stitches. Patient is perfectly well and free from symptoms at the present time (July, 1912).

M. S., female, aged 55, was admitted to the Leeds General Infirmary on October 24th, 1910. During the last ten years patient had suffered from pain in the left side and epigastrium coming on immediately after food and associated with vomiting. The attacks have become more frequent during the last two years; on several occasions she had slight haematemesis. In June, 1910, vomiting became worse; she was in bed for ten weeks. Since then she has had pain almost every day and frequent vomiting. No more haematemesis; no melaena. Twelve years ago she weighed 11 st.; two years ago she weighed 9 st.; her present weight is 6 st. 5½ lb. A year ago a diagnosis of carcinoma of the stomach was made. On abdominal examination the stomach is dilated; marked visible peristalsis; no tumour to be felt.

October 28th. Abdomen opened through the right rectus. A very large crateriform ulcer was found on the lesser curvature of the stomach close to the cardiac orifice, extending to both the anterior and posterior surfaces of the stomach. Wedge-shaped excision of the ulcer and the stomach closed with three layers of suture. Eleven days after the operation the patient was progressing well and taking fish, etc., without discomfort. At the present time she is in excellent health.

N. H., female, aged 47, was admitted to the Leeds General Infirmary on December 12th, 1911. She had suffered from indigestion for several years, and had been an in-patient in a hospital on two occasions. She had never had any haematemesis or melaena, and her principal complaint was pain in the epigastrium coming on very shortly after food. On abdominal examination an indefinite mass was felt in the epigastrium; marked muscular rigidity and tenderness; no splash.

December 21st, 1911. The abdomen was opened and an ulcer found on the lesser curvature, and both surfaces of the stomach adherent to the anterior abdominal wall, to the liver, and to the pancreas. Adhesions separated with difficulty, and the ulcer excised by the ordinary wedge method.

The patient made a good recovery from the operation and was discharged on January 6th, and is in good health at the present time and free from symptoms.

II.—*Case in which Adhesions after Excision necessitated a Gastro-Enterostomy.*

E. McC., male, aged 17, admitted to the Batley Hospital in June, 1911. He started work in the mine at the age of 13, and was quite well and strong, and working every day until the summer of 1908. He then had a severe attack of haematemesis, from which he recovered quickly. He continued at work until October, 1910, when he had another haemorrhage. This was followed by severe epigastric pain and repeated vomiting after food, symptoms which persisted up to his admission. He was extremely wasted and anaemic.

July 9th, 1911. The abdomen was opened, and a large ulcer found on the lesser curvature of the stomach, adherent to all the surrounding structures, and evidently having perforated for some time. The ulcer was separated with great difficulty, and considerable haemorrhage; margins of ulcer excised, and stomach closed with three layers of suture. The ulcer was simple. Patient made a very slow recovery, and return of pain and vomiting caused his readmission to hospital in December, 1911. He improved for a time, but eventually in March, 1912, the abdomen was reopened. The stomach was found dilated and embedded in adhesions. Posterior gastro-enterostomy performed.

The patient made a good recovery from the second operation, but symptoms have again returned. He is still very anaemic, and complains of pain when he attempts to work. Altogether the result is unsatisfactory.

III. *Cases in which Recurrence of Ulceration took place.*

G. G., male, aged 48, had suffered for two years from pain coming on two hours after food; relieved by taking a little more food or by a hot drink. No haematemesis or melaena and only occasional vomiting. He lost 21 lb. in weight during two years. On June 11th, 1910, he was operated on by another surgeon, an ulcer being found high up on the lesser curvature near the cardiac orifice. The ulcer was excised. Appendicectomy was performed. The patient made a good recovery. Microscopical examination of the ulcer showed no sign of malignancy. He remained well for some months and then his symptoms returned, and he was admitted to the Leeds General Infirmary on January 5th, 1911, suffering from general peritonitis following a severe attack of pain three days previously. I opened the abdomen and found a large perforation of an ulcer in the situation of the old excision. This was sutured and the abdomen drained. The patient, however, died six days later.

Mrs. T., aged 48, was seen on May 10th, 1911. For some years patient had suffered from indigestion, which has become worse during the last year. During the last six months has complained of severe pain in epigastrium immediately after taking food. Has rarely vomited, and has never had haematemesis. No melaena. Has lost 2 st. in weight during the last year.

Abdominal examination: Diffuse tenderness in epigastrium with rigidity. No tumour; no visible peristalsis; no splash.

Operation, May 18th. Ulcer on lesser curvature about size of sixpence. Considerable amount of thickening; wedge excised; three-layer suture; drain.

Microscopical examination: simple ulcer.

The patient made a good recovery from the operation, and was relieved of her symptoms, though the pain after food quickly returned, and was associated with occasional vomiting. Nine months later the abdomen was reopened, and a recurrent ulcer found in the scar of the excision. Posterior gastro-enterostomy to the left of the ulcer. Recovery.

The patient is now quite well, and has gained considerably in weight.

M. M., female, aged 27, was admitted to the Leeds General Infirmary on May 22nd, 1911. Has complained of pain after food for some years. When the pain is present she is unable to take solid food, because it increases the severity of the attack. She has vomited during attacks of pain, and this has relieved her. At the present time the pain is always present. Some twelve months ago she was able, by starving herself for a day or two, to relieve herself of the pain, but at the present starving has no effect. The bowels, she says, have sometimes been constipated, and at others she has been troubled with diarrhoea. There is a history of melaena, patient saying that she has passed blood many a time. There is also a history of bright red blood appearing in the vomit; this also has occurred more than once.

June 2nd. *X*-ray examination indicated the presence of an hour-glass stomach.

Operation: Ulcer upon lesser curvature near cardiac orifice. Ulcer excised; stitched; drained with rubber tube; removed on fifth day; replaced by gauze.

Microscopical examination: Simple ulcer.

The patient made a satisfactory recovery from the operation of excision, and was perfectly relieved of her symptoms for some months. She then had a return of pain and vomiting, but no haematemesis or malaena. She was readmitted to the Leeds General Infirmary on June 1st, 1912, and the abdomen was reopened on June 13th. In the situation of the old scar in the stomach there was a large ulcer, with a considerable mass of dense cicatricial tissue in the wall of the stomach. A posterior gastro-enterostomy was performed to the left of the ulcer, and was followed by appendicectomy.

Recovery was rapid and straightforward, and the patient is now making satisfactory progress.

In these last three cases the recurrent ulcer was found in the scar of the previous excision, where one would naturally expect ulceration to occur if anywhere. In the following case, however, ulceration recurred in the anterior wall of the stomach a little distance below the old scar:

E. L., female, aged 39, was admitted to the Leeds General Infirmary on July 26th, 1910. From the age of 14 to 23 patient had suffered from bilious attacks, vomiting, and sick headache. After 27, had every few months attacks of indigestion lasting for about a month. From November, 1908, began to have pain below right costal margin. During the last twelve months she has had attacks of another type—pain in left hypochondrium, severe pain in body below umbilicus; pain is worse after food, and greatly relieved by vomiting. These attacks have lasted from seven to fourteen days. She is always constipated; there is no haematemesis, melaena, or jaundice. Is thin; movable

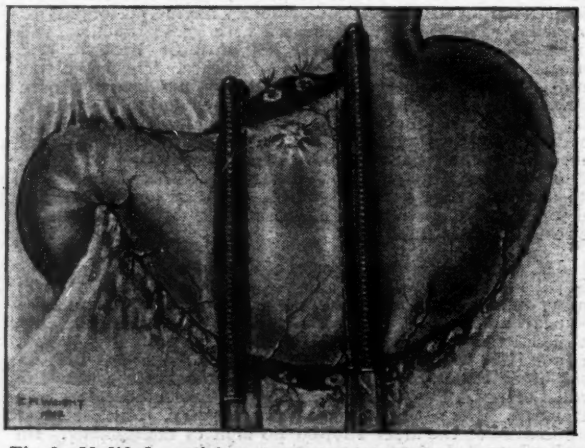

Fig. 2.—Modified partial gastrectomy for ulcer on the lesser curvature of the stomach.

kidney on right side, no dilatation of stomach, general tenderness in epigastrium.

Operation: Incision through right rectus. Ulcer found on posterior surface high up near cardiac end of lesser curvature. Excised. Three layers of suture. Appendicectomy. Microscopical examination: Simple ulcer.

The patient made a good recovery from the operation, but on June 9th, 1911, was readmitted for recurrence of symptoms of pain and vomiting. There was diffuse tenderness in the epigastric region with rigidity of the abdominal wall. On opening the abdomen an ulcer was found on the anterior surface of the stomach adherent to the abdominal wall. The ulcer was situated below the scar of the previous excision, and quite distinct from it. On separating the mass from the abdominal wall the ulcer was found to be perforated.

Modified gastrectomy with gastro-enterostomy was performed. Recovery. The patient is now perfectly well (July, 1912).

Microscopical examination of the second ulcer showed it to be simple.

It is difficult to account for the recurrence of ulceration in these four cases. In each the primary ulcer was simple and not malignant.

It may be noted that in two of the cases the appendix had been removed at the first operation. Whatever part it may have played in causing the original ulcer, it clearly could have nothing to do with the recurrence. The presence of an unabsorbed suture has been held responsible for the development of gastro-jejunal ulcers after gastro-enterostomy, and it is possible a recurrence in the scar might be caused in the same way. But in all these cases except one, of which there is some doubt, fine catgut was used for the innermost suture, and in one case the ulceration developed at some little distance from the scar. Three of the patients—Mrs. T., E. N., and E. L.—had certainly exercised great care in matters of diet, and in them recurrence cannot be attributed to carelessness in this respect.

From the results of these cases it must be concluded that excision of a gastric ulcer is an operation which is likely to be followed by a return of symptoms in an appreciable proportion of cases. In some this will be due to adhesions: in others, perhaps, to stenosis; but in many it will be due to recurrent ulceration. It is likely that these troubles could be avoided by performing a gastro-enterostomy at the same time as the excision, as has been done by Mr. Gilbert Barling. In the following case, when this was done, ulceration of the jejunum necessitated a second operation.

M. W., female, aged 40, was admitted to the Leeds General Infirmary on June 24th, 1910, under the care of Dr. Barrs. She had a history of gastric ulceration extending over twenty years, with recurrent attacks of pain and vomiting. During the last two years the attacks had become more severe. She had lost 5 st. in weight in that time. On abdominal palpation a well-defined mass could be felt in the epigastrium. *X*-ray examination was of no assistance.

July 18th, 1910. A median incision disclosed a large simple ulcer, as big as a crown piece, on the anterior surface of the stomach adherent to the abdominal wall. The whole stomach was very adherent, and there was much inflammatory thickening of the stomach wall. The ulcer was excised and the opening in the stomach closed by three layers of suture. An anterior gastro-enterostomy with entero-anastomosis was then performed. The patient made a good recovery, and on her discharge was taking solid food without discomfort.

Between August and November, 1910, the patient gained 2 st.

Fig. 3.—Modified partial gastrectomy completed by a gastro-enterostomy.

in weight, but in November began to complain of severe pain in the left hypochondrium; no vomiting or haematemesis. On examination, a large mass was to be felt adherent to the abdominal wall; there was extreme tenderness on pressure.

On December 5th, 1910, the abdomen was reopened and a large ulcer was found in the jejunum immediately below the gastro-enterostomy opening, perforated and adherent to the anterior abdominal wall, which formed the floor of the ulcer. The scar of the previous excision was quite healthy. The affected portion of the stomach, with the ascending and descending loops of jejunum, were removed, and the continuity of the stomach and bowel restored. The patient was thus left with a very small stomach, but without a gastro-enterostomy opening. She made a good recovery, and when last seen, some months later, was quite well and had gained in weight.

For an ulcer on the lesser curvature the combined operation of excision of a wedge and gastro-enterostomy is one of some magnitude, probably quite as difficult and time-consuming as a wide resection of the stomach. The type of operation done for cancer is not necessary for a simple ulcer. We wish to excise the ulcer with a margin of healthy tissue around, and to complete the operation by a gastro-enterostomy. This must be done as quickly as possible, as many of these patients are very feeble; it must be possible to avoid soiling the field and to have adequate control over the blood supply. But a wide resection of the stomach is not necessary, and we can fulfil all the requirements and at the same time avoid the greatest risk of a partial gastrectomy, that is, leakage from the sutured duodenum, by carrying the distal section through the pyloric portion of the stomach instead of through the duodenum.

In the operation suggested (Figs. 2 and 3) the stomach is

divided between clamps on the distal side of the ulcer; the pyloric pouch is closed by suture, and the proximal portion of the stomach turned over to the left. A posterior gastro-enterostomy is done well to the left of the ulcer. Clamps are applied on the proximal side of the ulcer, and the middle portion of the stomach containing the ulcer is excised. The stomach incision is then sutured.

This operation has been done in the following cases:

S. E., woman, aged 36, was admitted to the Leeds General Infirmary on February 3rd, 1911, under the care of Dr. Barrs. She was an in-patient at the infirmary from August, 1909, to December, 1909, suffering from pain after food, vomiting, and wasting. A tumour was felt in the epigastrium, and the case was thought to be one of inoperable carcinoma of the stomach. Since December, 1909, the patient has been practically confined to bed; she has had pain and vomiting nearly every day; she has only been able to take milk. She has been taking morphine continuously for the last year. She is very wasted and anaemic, though she has not lost weight lately.

In the epigastric region there is to be felt a firm mass, which extends from the umbilicus to the left costal margin. The mass appears to be fixed to the abdominal wall; it does not move on respiration, but transmits the pulsation of the aorta. There is extreme tenderness on pressure over the tumour. There is no visible peristalsis; there is some gurgling to be made out on pressure to the left of the tumour.

X-ray examination after a bismuth meal suggested an hour-glass contraction of the stomach.

From the length of time that had elapsed since the diagnosis of carcinoma of the stomach first was made, and from the fact that the tumour had not greatly increased in size, it was clear that the condition was not one of malignant disease. It was determined to explore the abdomen.

February 16th, 1911. Ether. Incision in the middle line above the umbilicus. The abdomen was opened above and below the tumour, which was infiltrating the abdominal wall. The peritoneal cavity was packed with gauze and the stomach separated from the anterior abdominal wall. A large saddle-shaped ulcer involving almost the whole of the lesser curvature was found. It was perforated, the base being formed partly by the anterior abdominal wall in front, by the liver above, and the pancreas behind. There were dense adhesions to all these structures, which were separated with considerable difficulty. After freeing the stomach, clamps were applied and a modified partial gastrectomy performed. A very small amount of the cardiac end of the stomach was left available for the gastro-enterostomy. The pancreas was torn in stripping off the stomach, and for this reason a drain was inserted. The gall bladder was full of gall stones, but as the condition of the patient precluded any prolongation of the operation these were not interfered with.

The patient made a good recovery from the operation, though there was a discharge of pancreatic fluid for some little time. The wound, however, healed quickly. Microscopical examination: simple ulcer.

July 8th, 1912. Is quite well, and has gained 4 st. in weight.

K. W., female, aged 51, was admitted to the Leeds General Infirmary on November 15th, 1911. For as long as she can recollect patient has been troubled with indigestion, which at times has got considerably worse. She has pain continuously, and she does not think the ingestion of food has much effect on the character or intensity of the pain. The pain commences in the epigastric region, travels round to the back, and frequently up to the shoulder. For many years there has been persistent constipation. The teeth were removed two years ago, since when she has worn artificial teeth, both upper and lower. Vomiting has sometimes been present, but only slight, and then has never been noticed to contain blood, altered or otherwise.

Peristaltic waves can be seen in the epigastrium, and on palpation what is apparently the stomach can be felt hardening under the hand. When dilated the stomach could be well seen showing vigorous peristaltic movements.

November 22nd, 1911. Ether. Large ulcer on lesser curvature. Modified partial gastrectomy and posterior gastro-enterostomy.

The patient made a good recovery, and is in excellent health at the present time. She has gained weight, and has no gastric symptoms.

M. S., female, aged 32, was admitted to the Batley Hospital on November 10th, 1911. She commenced to suffer from attacks of indigestion eleven months ago, associated with vomiting, and on one occasion with a profuse haematemesis. As a result of hospital treatment she improved quickly, lost her pain, and was able to resume her work. She remained well for two months and then the symptoms returned, and on November 10th she had another severe haematemesis. With rest in bed she quickly improved, and on December 17th the abdomen was opened and a large saddle-shaped ulcer of the lesser curvature was found. The ulcer was very adherent to the pancreas, and was separated with difficulty. Modified gastrectomy and gastro-enterostomy performed. The patient made an uninterrupted recovery, and was discharged from the hospital on January 26th, 1912, free from pain and vomiting, and able to eat anything. On July 9th, 1912, she reported herself quite well and working.

The fourth case in which this operation of modified gastrectomy was performed was the woman E. L., who had a recurrent ulcer on the anterior wall of the stomach after an excision (vide supra).

In all these cases the results have been excellent; there has been no trouble with the pyloric pouch, and all the cases are free from symptoms. The operation is not more difficult than that of a wedge excision. It occupies little more time, and has many advantages. The ulcer is removed; it cannot bleed, perforate, or become malignant. Recurrent ulceration in the stomach is unlikely, as a gastro-enterostomy has been done. There is some risk of jejunal ulcer, as in every case in which a gastro-enterostomy has been performed, but this is very slight.

To sum up, it may be said that for ulcer of the body of the stomach and on the lesser curvature the operation of excision is unsatisfactory. When the patient is in a position to stand a somewhat severe operation, modified gastrectomy on the lines laid down is suitable and satisfactory. In others a posterior gastro-enterostomy well to the cardiac side of the ulcer is indicated. Anterior gastro-enterostomy should never be done.

DISCUSSION.

Mr. W. I. de Courcey Wheeler (Dublin) hesitated to take up the position that gastrectomy was a suitable treatment for gastric ulcer unless one were seriously driven to it. Its mortality was high. Gastro-enterostomy was a much more satisfactory operation.

Mr. Hey Groves (Bristol) stated that the mortality of the operation of primary excision of gastric ulcers was, according to Payr, between 15 and 20 per cent. It seemed to him that the solution of the difficulty lay in the performance of a two-stage operation. Mr. Dobson's cases proved most clearly that no radical operation was satisfactory without a gastro-enterostomy, and yet to perform an excision and an anastomosis at the same time was fraught with great risk. On the other hand, after a simple gastro-enterostomy three favourable things occurred. First, the patient's general condition rapidly improved; secondly, the local conditions in the stomach as regards sepsis were cured; and, thirdly, inflammatory adhesions often became much less dense. Then, at a later period of two to six weeks, the ulcer could be excised with little or no risk in those cases where this seemed desirable. The fact pointing to this desirability most strongly, in his opinion, was the great likelihood of chronic indurative ulcers having already become malignant, or giving rise to subsequent malignant growth. He was quite at a loss to know how any surgeon could decide in any given case, by seeing and handling an indurated mass in the stomach wall, whether it was innocent or malignant. There had been recently abundant evidence, especially the work of Wilson and Macarty, which proved that nothing short of a complete examination of serial sections could be taken as proof of the benignity of a gastric ulcer. And under these circumstances it was wise in every doubtful case to excise the mass, but this ought to be done after the patient had recovered from a preliminary gastro-enterostomy.

A CASE OF ANEURYSM OF THE SECOND AND THIRD PARTS OF THE LEFT SUBCLAVIAN ARTERY IN A WOMAN.

By G. P. Newbolt, F.R.C.S.Eng.,
Honorary Surgeon, Royal Southern Hospital, Liverpool, etc.

Cases of aneurysm in women are, comparatively speaking, rare, and it is very exceptional to meet with an aneurysm of the subclavian in a woman. It is only of late years that successful ligature of the innominate and left subclavian arteries has been possible, and on that account I think the following case worthy of record.

Miss E., aged 50, consulted me on February 3rd, 1912, concerning a pulsating swelling at the root of her neck on the left side which filled up the hollow above her collar-bone. This swelling had existed for three years in spite of treatment. It pulsated and the pulsation was distensile. The swelling involved the second and third parts of the left subclavian artery and the tumour extended into the axilla, where it could easily be felt. At one place above the collar-bone the swelling seemed to be just under the skin and threatened to come through. The inner margin extended well under the outer border of the sterno-mastoid

muscle. When 14 years old the patient had "fever" and her sight was badly affected, and at present she has "ground-glass" corneae. An iridectomy has been done on the right eye, but the sight of both is poor. Rest diminishes the swelling to some extent, but she is unable to take potassium iodide, arsenic, or mercury. When put on iodide a rash at once appears. Her doctor (W. H. Carse, of Rochdale) informed me that she had had marked endarteritis three years ago, when the vessels of her right arm were affected and her right radial pulse disappeared. The question of administering salvarsan was raised but not entertained.

There was no satisfactory history of syphilis, unless an infant she was nursing between three and four years ago was syphilitic, and this is hardly likely. The appearance of her eyes, however, was typical. The swelling did not cause her any pain. After examination I suggested ligature of the first part of the subclavian, and for this purpose she was admitted to the Royal Southern Hospital under my care on March 2nd, 1912. A radiogram was taken, which showed a shadow of the aneurysm above the clavicle, but the chest appeared to be clear. She was put on sodium iodide, but this produced an iodide rash in forty-eight hours. A careful examination failed to reveal any visceral disease in the abdomen or chest. On March 14th, 1912, I tied the first part of her left subclavian artery.

The patient was placed, with pillows under her shoulders, so that her head fell back and her face was turned to the right. The anaesthetic used was a mixture of oxygen and chloroform, given by Dr. Gardner-Medwin, whilst Mr. G. C. E. Simpson and Dr. Hargreaves assisted. An incision 6 or 7 in. long was made down the line of the sterno-mastoid on to the sternum, taking the sterno-clavicular joint as the centre of the incision. A second incision was made at right angles to the first extending along the collar-bone. Flaps were turned up and the collar-bone was exposed at its inner end. This structure was cleared by dividing the clavicular portion of the sterno-mastoid, and a rib elevator was passed under it, followed by a Gigli's saw, with which the bone was divided, the sternal end being turned inwards and dissected out. A small vein connecting the internal and external jugulars was tied, but there was practically no bleeding. The sterno-hyoid muscle was defined with dissecting forceps and partially divided. The internal jugular was very large and there was a high innominate junction, so that these veins practically filled the floor of the wound. By working down on the inner side of the internal jugular, the common carotid was exposed with the pneumogastric nerve lying on its outer side and behind. The big veins were now retracted downwards and outwards, and by drawing the carotid to the inner side the subclavian was felt pulsating deep down between the two. A vein crossing this space was tied, but the inferior thyroid vein was left untouched, and by scraping down with a blunt dissector the artery was exposed for a space of about ¾ in. The sheath was opened and the vessel found to be quite healthy. An aneurysm needle was passed from the inner side armed with a catgut ligature, and by means of the latter a loop of thick silk was drawn under the vessel. The latter was secured by tying the silk in two places with just enough force to occlude the vessel without damaging its coats. These ligatures were placed ½ in. apart, but one end of each was left uncut, and these were tied together. A reef knot was used. Pulsation at once stopped in the aneurysm. The wound was closed without drainage, but the cavity was obliterated as much as possible by bringing divided structures together. The arm, which was quite warm, was wrapped in cotton-wool.

The operation took forty minutes, but was not hurried over, and it was not as difficult as might have been expected. The patient was not stout, she took her anaesthetic perfectly, and there was no haemorrhage. The vessel lay very deep at a distance of from 2½ to 3 in. from the surface. The removal of a portion of the clavicle made the operation practicable, and the only important structures seen were the internal jugular, the left innominate and the left subclavian veins, the common carotid artery, the pneumogastric nerve, and the vessel itself. The pleura gave no trouble. It seemed to Mr. Simpson and myself that had we been pressed for room we could have got it by tying the internal jugular and pulling the lower end downwards. The subsequent history was uneventful as far as recovery went.

On the 15th she was very well, and her right carotid pulse was 84; no pulsation could be felt in the left radial, but her fingers were warm, and she moved them easily. There was no tingling of the fingers; she was a little sick after some beef tea. On the 16th she complained of a little pain down the left arm. On the 21st she was doing well, had suffered very little pain, and had only had a little tingling in her fingers. March 23rd she was dressed and the stitches were removed; the wound had healed, and the sac was hard and did not pulsate; she felt quite well and wanted to sit up. On April 5th she was propped up on a bed-rest; the aneurysmal swelling was smaller and decidedly softer, but there was no pulsation, and the swelling in the axilla was much smaller; there was no pulsation in the radial at the wrist. On April 15th there was a small ulcer over the lower part of the scar on the chest, and this was dressed. The swelling in the neck now felt like a soft cyst, and the axillary sac was smaller and harder. On April 16th she was allowed to get up, and on May 2nd she was shown at the Liverpool Medical Institution.

On May 10th she returned home, exactly eight weeks after ligature of the vessel, there being no sign of pulsation in the sac, which was rapidly disappearing. She was able to raise her arm fairly well, and could place her hand to the back of her head. The small ulcer on the scar had practically healed. On June 8th I saw her; she was very well, and her only trouble was the limitation in the power of abduction. The aneurysm had practically disappeared, but her left hand was decidedly colder than her right.

For the successful termination of this case I am indebted to the able assistance of my hospital colleagues, and also to the description of the case by Mr. Stonham in the *Lancet* of August 2nd, 1902. This successful case is, of course, well known as the first, if not the only one, in this country. The vessel has, I believe, been tied by Halsted, J. K. Rodgers, and by Schumpert, but I am not familiar with the results of these cases.

In ligaturing this vessel or the innominate, if silk be used (and personally I prefer this material), the strictest asepsis must be practised, otherwise there is a danger of the ligature being discharged from the wound, and a possibility, if not a probability, of secondary haemorrhage. The question of drainage depends upon whether there is likely to be much oozing. In my patient the wound was so dry that there was no necessity to drain. In placing the ligatures half an inch apart it was not possible to use the stay knot; hence two reef knots were used, the spare end of each being tied together. Ordinary silk twist, No. 7 in size, was used. Personally I have not absolute faith in the strength of catgut, however prepared, and the knot of kangaroo tendon is liable to loosen. My patient can be seen by those interested.

ONE THOUSAND CASES OF TOTAL ENUCLEATION OF THE PROSTATE FOR RADICAL CURE OF ENLARGEMENT OF THAT ORGAN.

By P. J. Freyer, M.A., M.D., M.Ch.,

Lieutenant-Colonel I.M.S. (R.); Consulting Surgeon, Queen Alexandra's Military Hospital; Surgeon, St. Peter's Hospital.

Eleven years have just elapsed since, in a lecture published in the British Medical Journal of July 20th, 1901, I first placed before the profession at large full details of my operation of total enucleation of the prostate for radical cure of enlargement of that organ. The anatomical and pathological considerations that render this operation practicable were then fully described, and I gave details of four instances in which I had performed the operation, in all with complete success. And here I have the pleasure to state that three of these patients are still alive, averaging about 80 years of age, two of them in perfect health, one suffering from heart disease, but all three absolutely free from urinary troubles, as they have remained since the operation.

It will be within the recollection of many of you that the previous decade and a half had been marked by unusual surgical activity in the attempt to find some radical cure for this dire disease. Partial prostatectomy, as expounded by Belfield and his imitators in America, and by McGill in this country, castration, and vasectomy had been successively tried and found unsatisfactory or useless, so that at the period referred to—the dawn of the present century—palliative treatment by catheterism, with all its drawbacks and dangers, held the field amongst the profession as the least objectionable—indeed, the only—method of treatment available.

During the eleven years that have elapsed since then I have published numerous lectures and papers in the medical journals on this subject.[1] Several of these papers were read at the annual meetings of this Association. In my earlier papers full details of my first 170 cases of the

operation were given, with the name of the doctor with whom I had seen the case in consultation outside my hospital practice. Subsequently I have been dealing with such large numbers that only cases illustrating some important features connected with the operation could be given in detail. In this way records of my first 800 operations have already been placed before the profession, and details of the remaining cases will be published later on.

Having now completed some 1,000 cases of the operation (the exact number is 995*), I have considered that it would be interesting to you to have a summary of the results presented to you, with some thoughts and reflections derived from this large experience of the operation.

The patients varied in age from 49 to 90 years, the average being 69. There were amongst them 62 octogenarians between 80 and 90 years, and 11 bordering on this age, 79 years.

The prostates removed weighed from ½ oz. to 17 oz., the average weight being 2¾ oz.

These 1,000 cases, though of course mainly drawn from the British Isles, embrace almost every race and nationality on the face of the earth. Nearly every country in Europe, all the republics of America, North and South, all our colonies and dependencies, are here represented. Two of them even hail from the small and remote island of St. Helena. The great majority of the patients had been entirely dependent on the catheter for periods varying up to twenty-four years. Nearly all of them came in broken health, and many were apparently moribund when the operation was undertaken. The vast majority of them were, indeed, reduced to such a miserable and painful condition that existence was simply unendurable; these latter were prepared to run any risk from operation provided I could assure them that in case of survival they could dispense with the catheter. Few of them were free from one or more grave complications, such as cystitis, vesical calculus, pyelitis, kidney disease, diabetes, heart disease, thoracic aneurysm, chronic bronchitis, paralysis, single, double, and even treble hernia, haemorrhoids, and in a few instances cancer of some other organ than the prostate. Such were the unpromising conditions under which in a large proportion of cases the operation was undertaken.

In connexion with these operations there were 55 deaths, or 5½ per cent., the remaining 945 operations, with the exception of one to which I will presently allude, being successful. With experience the mortality has been gradually diminishing from 10 per cent. in the first 100 cases to 4½ per cent. in the last 400; in my latest 100 cases there have been only 3 deaths. The causes of death were: Uraemia due to chronic kidney disease, 24; heart disease, 8; shock, 7; exhaustion, 3; septicaemia, 2; mania (hereditary in 1), 2; malignant disease of the liver, 2; bronchitis, 2; pneumonia, 1; heat-stroke, 1; pulmonary embolism, 1; cerebral haemorrhage with paralysis, 1; and acute pancreatitis, 1.

Though all these deaths are accepted in connexion with the operation, in not more than half the number can the fatal result be attributed thereto, the remaining deaths being due to disease incident to old age, and unconnected with the operation. This operation is comparable to none other in surgery owing to the advanced age to which it is mainly confined; and in judging of the mortality connected therewith, we must not lose sight of the fact that during the period of after-treatment and convalescence men of this age are liable to be carried off suddenly by disease entirely unconnected with the operation, the occurrence, however, if accepted in connexion with the operation, vitiating the results from a statistical point of view. Had the cases been selected, the mortality would have been infinitesimal; but, as will have been gathered from the successful cases described in detail in my numerous papers on the subject, selection would have condemned a large proportion of them to a painful death after prolonged suffering, instead of the complete restoration to health that ensued in each case after operation. It is, of course, impossible to avoid a certain small mortality when such cases are operated on. The wonder is that it is so small, considering the magnitude of the operation, the advanced age and conditions of the patients. But to refrain from operating in such cases, when there is any prospect of success, is to my mind utterly unjustifiable.

Nearly one-half the deaths connected with this operation were directly attributable to kidney disease resulting in uraemia, and in a large proportion of the deaths set down to other causes the kidneys were also affected. Kidney disease incident to prostatic enlargement is, of course, due mainly to two factors—backward pressure, caused by the obstruction to the natural flow of urine, and ascending affection of these organs from the cystitis, which invariably results sooner or later from the habitual use of the catheter. I cannot, therefore, too strongly urge the enucleation of the prostate, when there is decided enlargement of that organ accompanied by urgent symptoms necessitating the employment of the catheter, before grave complications set in. When undertaken whilst the patient's general health is sound and the kidneys unaffected there is practically no danger attaching to the operation in experienced hands; but when complications set in, and particularly when the kidneys become diseased, the operation must necessarily be attended by a considerable risk.

In 181 instances the prostatic disease was complicated by the presence of stone in the bladder, mostly of the phosphatic variety due to cystitis. The operation in these cases partook, of course, of a dual character—prostatectomy *plus* suprapubic lithotomy. Amongst these there were 16 deaths (all of which have been accepted as resulting from the prostatectomy part of the operation), or 8.84 per cent. Amongst the remaining 819 cases uncomplicated with stone there were 39 deaths, or 4.76 per cent., so that the mortality amongst the former was nearly double that from the latter, a fact which emphasizes still further the advisability of having recourse to prostatectomy at an early period before the formation of stone as a sequela to this disease sets in.

Another grave danger attached to postponement of operation is this—that recent experience has demonstrated beyond doubt that the adenomatously enlarged prostate, which is of course benign, has a tendency in a considerble proportion of cases to assume cancerous degeneration under the irritating influence of the catheter and the complications incidental to its habitual employment.

When I speak of "success" after this operation, what do I mean to convey to you by this term? I mean that in all cases of adenomatous enlargement of the prostate when my operation is properly performed, and the after-treatment carried out in the manner described in my published writings,[2] an absolute and permanent cure results, the patient regaining the power of retaining his urine at will and passing it naturally, without the aid of a catheter, as well as he ever did. There is no relapse of the symptoms; on the contrary, lapse of time only seems to consolidate the cure. There is no contraction at the seat of operation leading to organic stricture; there has been no instance of a permanent fistula resulting, and there is no loss of sexual power. I have in my possession many hundreds of letters from these patients and their doctors testifying to these facts. There are, indeed, no half measures about this operation. The patient can be assured beforehand that if he is prepared to accept the slight risk attached thereto he can with moral certainty look forward to a complete cure. In one case only have I known the patient fail to regain the power of voluntary micturition, and in this instance the bladder was quite flaccid, and seems to have been completely paralysed by the extreme over-distension before the catheter was employed.

I attribute the utmost importance to the rapidity with which the operation is accomplished. The essential portion of the operation, that during which profound anaesthesia is necessary, is covered by the time that elapses between commencing the suprapubic cystotomy and the delivery of the prostate from the bladder. With increased experience has come rapidity of execution. In the early days of the operation it was usual for this period to extend to twenty minutes or half an hour, or even more, whilst latterly in ordinary cases this period is covered by from two to four minutes, and in difficult cases by from eight to ten minutes. Rapidity in operating is of vital importance in an operation of this kind, confined as it is to persons of advanced age, thusshortening the period during which profound anaesthesia is necessary, minimizing the loss of blood and obviating shock.

* Shortly after this paper was read I completed 1,000 cases of the operation, and the statistics have been corrected accordingly.

With this large operative experience and my still larger acquaintance with prostatic disease in general, you might naturally expect that I should be able to tell you something definite, or at least to advance some theory, regarding the cause of the enlargement of the prostate in declining life. I have analysed innumerable cases and devoted much time and thought to this subject, but I have to confess that I have still no insight into the origin of this disease; and my researches would indicate that all theories hitherto advanced on this subject have no foundation in fact. My experience would seem to show that the previous mode of life led by the patient has nothing to do with the advent of this disease. It occurs with uniform frequency in persons who have suffered from urethritis and those who have not; in the married and unmarried; in the continent and those who have indulged in sexual excess; in persons of sedentary equally with those of active habits; in the gourmand, and in the man who has eaten sparingly all his life.

Even the purpose of the normal prostate in the human economy, always a subject of speculation, has been rendered more speculative still by the results of this operation. It is widely held that the prostate is some kind of accessory sexual organ. But there is no diminution of the sexual capacity after enucleation of the enlarged organ suprapubically by my method, the nerves controlling this function being left intact, though when removed perineally sexual desire would appear to be destroyed.

A very satisfactory feature in connexion with this operation is that the patients as a rule state, after the lapse of months or even years, that they feel from ten to twenty years younger than before the operation. I have been so much impressed by this remarkable rejuvenescence that, apart from the physical pain and mental depression caused by the obstructive symptoms, it has suggested itself to my mind that the enlarged gland may pour into the system some internal secretion of a toxic or deleterious character.

In my first paper[3] on the subject I wrote:

> These four operations have completely revolutionized my views with regard to the treatment of this painful and widespread malady, and I submit that the complete success with which they have been attended opens up a new and promising era in this field of surgery with far-reaching results . . . that we have at last arrived at a rational method of dealing with this painful and frequently fatal malady.

I submit that the forecast embodied in these words have been fully justified by the facts and statistics placed before you to-day, and by the almost universal practice of my operation by surgeons all over the world.

REFERENCES.

[1] BRITISH MEDICAL JOURNAL, February 1st, July 26th, November 8th, 1902; April 18th, July 4th, October 17th, 1903; May 21st, October 20th, 1904; May 20th, October 7th, 1905; March 9th, October 5th, 1907; October 2nd, 1909. *Lancet*, July 23rd, 1904; February 25th, 1905; May 1st, 1909; April 8th, 1911. [2] *Surgical Diseases of the Urinary Organs* (Baillière, Tindall and Cox). [3] BRITISH MEDICAL JOURNAL, July 20th, 1901.

DISCUSSION.

Professor RUSHTON PARKER congratulated Mr. Freyer on the completion of the great series of 1,000 cases of prostatectomy.

Mr. C. A. MORTON (Bristol) asked what were the late results of the early removal of cancerous prostates.

Mr. A. FULLERTON (Belfast) said that success was to be expected in the early stages of the disease. He was desirous of knowing what was the earliest age that symptoms of enlarged prostate appeared. His opinion was that it appeared after the age of 40.

Mr. BALLANCE (Norwich) thought that the presence of pyelitis was a serious complication in enlarged prostate. He had lost a few of these cases from extensive suppuration in the bladder and in the raw surface left after removal of the prostate. He advocated perineal drainage, particularly in those complicated cases he had in view.

Mr. HEY GROVES (Bristol) was convinced that the mortality of the operation was very much higher in general than had been indicated by Mr. Freyer's paper. At the Sheffield meeting in 1908 he had urged the desirability of a collective and impartial collection of operation statistics, and had illustrated his remarks by a reference to the operation of prostatectomy. Among all the cases available from all the large hospitals in the kingdom during the year 1907 the mortality was 40 per cent., and he ventured to think that even now this figure represented the average mortality of the operation much more nearly than that quoted by Mr. Freyer. The only way in which this high mortality could be reduced was by a careful selection of cases. It should only be done in those with a certain degree of functional renal efficiency. Mr. Freyer's statement and his writings led one to the impression that the more desperately ill and decrepit was the patient, the more suitable was he for prostatectomy. In his experience the operation was one of the easiest among the procedures of surgery, but the selection of cases likely to survive was a matter of great difficulty. In those doubtful cases where septic cystitis urgently demanded radical relief, but in which the vital functions were much impaired, it was much safer to operate in two stages. In the first a suprapubic drainage was performed, which relieved the back pressure upon the kidneys, and the septic state of the bladder. After a few weeks the prostate could be safely removed. In this procedure both stages could easily be performed under gas anaesthesia.

Mr. NEWBOLT (Liverpool) said that some of the hard fibrous prostates were very difficult to enucleate. His hospital mortality was heavy; in private it was not so bad. He agreed that it was sometimes advisable to operate in two stages.

Mr. FREYER, in reply, described his method of operating. The bladder was washed, then distended with boracic solution or sterile water. A vertical incision 2 to 3 in. long was made; the recti muscles were separated or cut. The bladder was still further distended by an assistant and made tense as a drum. With the finger (gloves were not worn) the prevesical tissues were scraped up out of the way for 2 in. above the pubis—the peritoneum was not seen—and then the knife was plunged into the bladder. The method of dealing with the prostate was sufficiently well known. He agreed that the fibrous prostates were difficult to deal with. Cases should be operated on before grave symptoms developed. In St. Peter's Hospital last year he had operated on 98 cases with 5 deaths only, and many of these patients were exceedingly ill; in some he did the operation in two stages. He could not understand how the mortality was put so high as 40 per cent. He never employed perineal drainage, and thought it was quite unnecessary. The object of the large drainage tube 1 in. in diameter was to drain perfectly. There was no time for pus to collect in the intravesical wound if the bladder were washed out twice a day. He did not remove the malignant prostate unless the disease were confined within the true capsule of the prostate—that was, if it had not spread into the sheath or second capsule. If the hard, apparently malignant prostate were movable in the surrounding tissues he removed it, but if it were fixed he made no attempt to remove it.

ACUTE APPENDICITIS: A PLEA FOR EARLY OPERATION.

By HERBERT J. PATERSON, M.C., M.A., M.B.Cantab., F.R.C.S.

THERE is still considerable difference of opinion as to the best treatment for acute appendicitis. Physicians and surgeons are divided into two opposite camps—those who advocate immediate operation in every case, and those who hold the view that each case should be judged on its merits. It is for the advocates of each view to justify their respective positions by the publication of statistics, and so determine the question, one which can and ought to be settled. "We ought to have no deaths from appendicitis, but we are having them," writes Dr. Murphy. In England and Wales appendicitis claims more than 1,500 victims annually. As one of the advocates of early operation, I have no hesitation in saying that the great majority of these deaths are preventable, and ought to be prevented.

No. of Case.	Sex and Age.	Duration of Symptoms Before Operation.	Condition Found.	Nature of Operation.	Previous Attacks.	Result.
1	F., 24	5 days	Perforated appendix; localized	Appendicectomy and drainage	2	Recovery.
2	M., 31	6 days	Leaking abscess	" "	1	Recovery.
3	M., 29	3 days	Perforated appendix; some adhesions	" "	0	Recovery.
4	F., 19	4 days	Acute appendicitis; mucosa gangrenous; not localized	" "	2	Recovery.
5	F., 23	3 days	Suppurative appendicitis; no adhesions	" "	Many	Recovery.
6	M., 33	3 days	Perforated appendix; local collection of pus; no adhesions	" "	0	Recovery.
7	M., 21	3 days	Localized abscess	Drainage	0	Recovery.
8	M., 19	36 hours	Gangrenous appendix, not shut off	Appendicectomy and drainage	0	Recovery.
9	M., 15	30 hours	Suppurative appendicitis, localized	" "	Several	Recovery.
10	F., 30	3 days	Acute appendicitis	Appendicectomy; no drainage	?	Recovery.
11	M., 40	24 hours	Acute appendicitis; old adhesions	" "	Several	Recovery.
12	M., 12	3 days	Perforative appendicitis; diffuse suppurative peritonitis	Appendicectomy and drainage	0	Recovery.
13	M., 7	4 days	Acute appendicitis; no adhesions	" "	0	Recovery.
14	M., 20	28 hours	Gangrenous appendix; diffuse suppurative peritonitis	" "	1	Death 15th day after operation.
15	F., 39	8 days	Acute suppurative appendicitis, localized	Drainage	Many	Recovery.
16	M., 23	36 hours	Gangrenous appendix; adhesions not noted	Appendicectomy; no drainage	?	Recovery.
17	M., 6	10 days	Localized suppuration	Drainage	?	Recovery.
18	M., 15	3 weeks	Acutely inflamed appendix; localized suppuration	Appendicectomy and drainage	?	Recovery.
19	F., 25	48 hours	Appendix and caput caeci gangrenous; free fluid	" "	0	Recovery.
20	M., 24	3 days	Gangrenous appendix; no adhesions	" "	1	Recovery.
21	M., 28	5 days	Free fluid; pus round acutely inflamed appendix	" "	Several	Recovery.
22	M., 17	3 days	Perforated appendix; no adhesions	" "	?	Recovery.
23	F., 25	3 days	Acute appendicitis	" "	1	Recovery.
24	M., 30	6 days	Localized abscess behind caecum	Drainage	—	Recovery.
25	M., 40	4 days	Acute appendicitis; almost perforated	Appendicectomy and drainage	?	Recovery.
26	F., 51	7 days	Leaking localized abscess; diffuse suppurative peritonitis	Drainage	0	Death 8th day after operation
27	M., 22	4 days	Perforated appendix; diffuse suppurative peritonitis	"	0	Recovery.
28	M., 53	3 days	Perforated appendix; diffuse suppurative peritonitis	Appendicectomy and drainage	3	Recovery.
29	M., 49	30 hours	Perforated appendix; much free fluid in abdomen	Appendicectomy; no drainage	0	Recovery.
30	M., 14	6 days	Diffuse suppurative peritonitis	Drainage	0	Recovery.
31	M., 12	3 days	Acute appendicitis	Appendicectomy and drainage	1	Recovery.
32	M., 6	2 days	Acute ulcerative appendicitis	Appendicectomy; no drainage	—	Recovery.
33	F., 21	2 days	Gangrenous perforated appendix; no adhesions	Appendicectomy and drainage	0	Recovery.
34	F., 29	4 days	Acute appendicitis	" "	0	Recovery.
35	F., 14	2 days	Diffuse suppurative peritonitis	Appendicectomy and drainage; 7 days later enterostomy	—	Recovery.
36	M., 31	3 days	Acute appendicitis	Appendicectomy and drainage	1	Recovery.
37	M., 12	24 hours	Acute appendicitis	Appendicectomy; no drainage	0	Recovery.
38	M., 19	4 days	Acute appendicitis	Appendicectomy and drainage	2	Recovery.
39	F., 27	6 days	Appendix distended with pus	Appendicectomy; no drainage	1	Recovery.
40	M., 33	3 days	Appendix nearly perforated	Appendicectomy and drainage	1	Recovery.
41	M., 41	4 days	Partially gangrenous appendix	" "	4	Recovery.
42	F., 32	2 days	Appendix ulcerated, full of pus	" "	1	Recovery.
43	M., 11	30 hours	Gangrenous appendicitis; diffuse suppurative peritonitis	" "	1	Recovery.
44	M., 19	24 hours	Appendix almost perforated; large concretion	" "	1	Recovery.
45	F., 14	3 days	Perforated gangrenous appendix	" "	—	Recovery.
46	M., 25	18 hours	Gangrenous appendix	Appendicectomy; no drainage	0	Recovery.
47	F., 19	2 weeks?	Acute appendicitis	Appendicectomy and drainage	0	Recovery.
48	F., 16	36 hours	Appendix partially gangrenous	Appendicectomy; no drainage	0	Recovery.
49	F., 32	2 weeks	Acute gangrenous appendicitis; intestinal obstruction	Appendicectomy and caecostomy	0	Death.
50	M., 14	4 days	Perforated gangrenous appendix; free lying pus; no adhesions	Appendicectomy and drainage	0	Recovery.
51	M., 29	50 hours	Acute appendicitis	Appendicectomy; no drainage	—	Recovery.
52	F., 26	4 days	Acute appendicitis; no adhesions	" "	—	Recovery.
53	M., 35	36 hours	Free pus in peritoneal cavity; gangrenous appendicitis	Appendicectomy and drainage	—	Recovery.

* Died of intestinal obstruction four months after leaving hospital.

No. of Case.	Sex and Age.	Duration of Symptoms Before Operation.	Condition Found.	Nature of Operation.	Previous Attacks.	Result.
54	M., 29	3 days	Perforated appendix	Appendicectomy and drainage	3	Recovery.
55	M., 40	60 hours	Gangrenous appendix; diffuse suppurative peritonitis	" "	—	Recovery.
56	M., 9	2 days	Gangrenous appendix; diffuse suppurative peritonitis	" "	—	Recovery.
57	F., 18	2 days	Gangrenous perforated appendix; localized pus	" "	—	Recovery.
58	F., 27	3 days	Appendix almost perforated	" "	—	Recovery.
59	M., 62	2 weeks	Localized abscess	" "	—	Recovery.
60	M., 15	60 hours	Localized collection of pus	" "	1	Recovery.
61	F., 22	4 days	Acute appendicitis	Appendicectomy; no drainage	—	Recovery.
62	F., 10	60 hours	Localized collection of pus	" "	—	Recovery.
63	F., 10	36 hours	Perforated gangrenous appendix; some pus around it; no adhesions	" "	—	Recovery.
64	M., 14	2 days	Gangrenous appendix; almost perforated; no adhesions	" "	—	Recovery.
65	M., 31	3 days	Appendix gangrenous; much free pus; no adhesions; intestines greatly distended; free fluid in peritoneal cavity	Appendicectomy, drainage, and appendicostomy	—	Recovery.
66	M., 6	2 days	Gangrenous appendix; diffuse suppurative peritonitis	Appendicectomy and drainage	—	Recovery.
67	M., 27	7 days	Appendix ulcerated and lost in localized abscess	" "	—	Recovery.
68	M., 14	5 days	Gangrenous perforated appendix; much pus	" "	—	Recovery.
69	F., 30	4 days	Acute appendicitis; diffuse suppurative peritonitis	" "	—	Recovery.
70	F., 34	1 week	Acute appendicitis	Appendicectomy	1	Recovery.
71	M., 25	3 days	Acute appendicitis, suppurative	Appendicectomy and drainage	—	Recovery.
72	F., 78	1 week	Gangrenous appendix; much intestinal distension; free fluid in abdominal cavity	Appendicectomy and drainage; 10 days later enterostomy for obstruction	—	Death 14th day after operation
73	M., 12	4 days	Appendix full of pus; mucosa gangrenous	Appendicectomy; no drainage	—	Recovery.
74	F., 15	5 days	Appendix gangrenous; diffuse suppurative peritonitis	Appendicectomy and drainage	—	Death.
75	M., 20	40 hours	Perforation; diffuse suppurative peritonitis; intestines greatly distended	" "	—	Recovery.
76	M., 22	2 hours	Appendix full of pus; mucosa ulcerated; no adhesions	Appendicectomy; no drainage	1	Recovery.
77	F., 13	30 hours	Appendix full of pus; mucosa ulcerated	" "	—	Recovery.
78	F., 24	36 hours	Appendix perforated; pus escaping; no adhesions	Appendicectomy and drainage	—	Recovery.*
79	M., 22	36 hours	Appendix gangrenous and perforated; localized suppuration	" "	1	Recovery.
80	F., 38	†13 days	Localized abscess	" "	—	Recovery.
81	M., 37	3½ days	Appendix and part of caecum gangrenous; diffuse suppurative peritonitis	" "	1	Recovery.
82	M., 11	24 hours	Gangrenous appendix	" "	—	Recovery.
83	M., 24	7 days	Acute appendicitis	" "	1	Recovery.
84	F., 10	7 days	Localized abscess	" "	2	Recovery.
85	M., 15	24 hours	Enormous appendix; pus around it; no adhesions	" "	0	Recovery.
86	F., 55	2 weeks	Localized collection of pus	Drainage	0	Recovery.
87	F., 44	3 weeks	Localized collection of pus	"	0	Recovery.
88	F., 24	10 days	Diffuse suppurative peritonitis	Appendicectomy and drainage	0	Recovery.
89	M., 38	4 days	Acute appendicitis	" "	2	Recovery.
90	M., 40	4 days	Suppurative appendicitis	" "	Many	Recovery.
91	F., 28	4 days	Appendix gangrenous distal half; no adhesions	" "	0	Recovery.
92	F., 47	5 hours	Collection of pus free in right iliac fossa	" "	0	Recovery.
93	F., 33	10 hours	Acutely inflamed appendix; no adhesions	" "	Several	Recovery.
94	F., 16	3 days	Leaking abscess	" "	Several	Recovery.
95	F., 42	3 days	Commencing diffuse peritonitis	" "	Several	Recovery.

* Five months pregnant. Aborted twenty-seven days after operation.
† At first diagnosed as pyosalpinx, and so not operated on at once.

SUMMARY.

	Cases.
Cases with diffuse suppurative peritonitis ...	17
Local collection of pus, but no adhesions ...	9
Gangrenous appendix, but no adhesions ...	6
Perforated appendix, but no adhesions ...	3
Acutely inflamed appendix, but no adhesions ...	6
Localized collection of pus	18
Localized but leaking abscess	3
General peritonitis, not suppurative	6

Total cases 95; recovered 90, died 5; mortality-rate 5.2 per cent.

Fatal Cases.

1 (No. 14). Male, aged 20 years. Symptoms 28 hours. At operation, diffuse suppurative peritonitis. Died 16th day after operation. At necropsy, suppurative peritonitis still present.

2 (No. 26). Female, aged 51 years. Symptoms 7 days. At operation, localized abscess which had leaked, causing diffuse suppurative peritonitis. Patient died on 8th day after operation. At necropsy, diffuse suppurative peritonitis still present.

3 (No. 49). Female, aged 32 years. Symptoms two weeks. At operation, gangrenous appendicitis, intestinal obstruction, intestine punctured and evacuated. Died third day after operation, obstruction unrelieved.

4 (No. 72). Female, aged 78 years. Symptoms one week. At operation, non-suppurative peritonitis, gangrenous appendix, extreme intestinal obstruction. Relieved at first, obstruction recurred. Enterostomy on twelfth day after first operation. Death two days later.

5 (No. 74). Female, aged 15. Symptoms five days. At operation, gangrenous appendix, diffuse suppurative peritonitis. Death second day.

For three years I have operated, as soon as possible, on every case of acute appendicitis as soon as I have made up my mind as to the diagnosis, and my cases are tabulated in the table on pp. 871–2. The list of 95 cases includes every case of acute appendicitis which I have seen during this period. In no case has operation been declined.

My procedure in the past with regard to the treatment of acute appendicitis may be divided into three periods, and it is instructive to compare the respective mortality-rates. During the first period, if I could possibly avoid it, I never operated until the acute stage was over, and rarely unless there was evidence of an abscess; the mortality in this series of cases is 16 per cent. During the next period I attempted to judge each case on its merits; the mortality in this series is 13 per cent. In my present series the number of cases is 95, and there were 5 deaths, a mortality of 5.2 per cent.

In 17 cases diffuse suppurative peritonitis was present at the time of operation; by this I mean the presence of purulent fluid free in the peritoneal cavity, and not a localized collection in the right iliac fossa. In 9 of the cases there was a local but not localized collection of pus, not surrounded by adhesions, in the neighbourhood of the appendix, but which had not, at the time of operation, become disseminated.

In 6 cases the appendix was gangrenous and free in the peritoneal cavity; in 3 cases there was a perforation of the appendix without any adhesions, and in 6 cases the appendix was acutely inflamed and not surrounded by any protective barrier of lymph. So that in 24 of the cases (25.2 per cent.) there was either perforation or gangrene of the appendix or pus surrounding it, without any protecting adhesions to limit the spread of infection to the general peritoneal cavity. In 3 cases there was a localized abscess which had leaked, with commencing peritonitis; adding to these the cases in which diffuse suppurative peritonitis was present at the time of operation, we see that in 44 (46 per cent.) of the cases there was a septic focus without any protective adhesions. It is difficult to believe that many of these cases would have recovered without operation.

In a former paper[1] I have called attention to the frequency with which the local signs and general condition of the patient give no indication whatever of the gravity of the condition within the abdomen—cases in which there may be only a slight rise of temperature, a normal pulse, and only a slight tenderness over the appendix, and yet the appendix is perforated or gangrenous. In this series there were 12 cases which came under this category. It is futile to talk of judging such cases on their merits. It cannot be done, even by the most experienced clinician.

The number of deaths from appendicitis is, I think, far higher than would be the case if the safety and advisability of early operation were generally recognized. Four of the patients in my series who died had been ill for over five days before the operation. Four of them (Cases Nos. 14, 26, 72, and 74) at the time of operation had already diffuse suppurative peritonitis. The remaining patient had general peritonitis, not suppurative, and intestinal obstruction. One of the patients, a woman aged 78 years, although she had diffuse peritonitis, recovered from her operation, but died fourteen days later from cardiac failure, three days after a secondary operation for intestinal obstruction. I think four at least of these deaths might have been prevented had the patients come under surgical care sooner.

One of the fatal cases (No. 14) is of some interest. The patient had been ill only twenty-eight hours, and yet had a gangrenous appendix with diffuse suppurative peritonitis. After operation he appeared to be on the way to recovery, his bowels were well opened, and yet he died sixteen days later. At the *post-mortem* examination it was found that diffuse suppurative peritonitis was still present. I think this case exceptional, and I have discussed it with Dr. J. B. Murphy and many other surgeons, none of whom has met with a case in which the patient has lived so long after operation for diffuse suppurative peritonitis and yet has not recovered. My experience is that after operation, when once the bowels are thoroughly opened, the patient is, as regards the abdominal condition, out of danger. In this case one can only surmise that the patient's powers of resistance were so small that they were unequal to the fight. I do not see how this death could have been prevented, but none of the others would, I think, have occurred had an early operation been performed.

The mortality-rate of the acute cases in my series is 5.2 per cent.; if interval operations during the same period are included, my mortality-rate for all cases is 3.4 per cent. It is for the opponents of early operation to show that they can obtain *better* results by delay. It is not sufficient for them to show as good results, because granted, for the sake of argument, that the mortality-rate under the two methods of treatment is the same, the advantage rests with immediate operation, as the risk of further attacks is done away with and the convalescence is shortened; for I suppose no one nowadays will dispute that when a patient has had an undoubted attack of appendicitis, the wise course is to have the appendix removed, whether this be done during the attack or after it has subsided. I very much doubt whether any one can show in an unselected consecutive series of cases treated by the expectant method a mortality-rate as low as 5 per cent. This being so, I maintain that immediate operation is the proper treatment for appendicitis, and if this principle were recognized and acted upon, the mortality for appendicitis would speedily be reduced to under 2 per cent. Even this is, I think, too high a death-rate, but at least we should not be satisfied until our results approach this standard.

I wish to emphasize one point which has, I think, been overlooked in discussing the question of immediate operation: Before the introduction of continuous proctoclysis, the Fowler position, the use of ether instead of chloroform, I believe the expectant treatment was safer than immediate operation. Thanks, however, to these life-saving measures, the results of operation during the acute stage are immensurably better than a few years back.

In acute appendicitis the operation must be limited both in time and extent. As Dr. Murphy well puts it, "the extent of the operation must be limited by the constitutional symptoms of sepsis, rather than by the extent and character of the pathological changes." No extensive manipulations, no flushing or sponging are permissible. If the operation is not to be performed gently and quickly, expectant treatment will give better results. With gentleness and rapidity, however, I am convinced that immediate operation is far safer than procrastination. As I have said elsewhere, in acute appendicitis the symptoms are often so deceptive, the signs of danger so slight, and the ultimate issue so uncertain, that clinical observation, the living pathology of the disease, and the results obtained by the surgery of to-day, all point to early operation as the treatment of choice.

REFERENCE.
[1] *Lancet*, May 13th, 1911.

DISCUSSION.

Sir GEORGE BEATSON (Glasgow) said: I intend to confine my remarks to the treatment of acute appendicitis. I would remind you that twenty-three years ago McBurney wrote that we ought to be able to save all our cases of appendicitis; that high standard of perfection has not been reached. Can surgery alone do it? We have to consider how appendicitis presents itself in ordinary practice and under ordinary conditions. Sometimes the cases are seen within a few hours of their beginning and sometimes a week or more has elapsed since the beginning of the attack. If you operate on all these cases that you see within a few hours, the results are all that can be desired. But as regards those cases which have been ill for three to six days, any one knows that this is the most dangerous class and often the most disastrous. I find what is wrong in these is that there has been extended to this intermediary class the plan which you are going to adopt, and in which we all agree for the immediate case. I say you cannot expect the same results from these intermediary cases that you do get from the ordinary cases. What is the immediate operation? Is it immediately after you see the patient irrespective of the period of the disease? If you follow that rule you will have bad results. It is impossible to see all your cases in the very earliest stages. The question now is, Is surgery the best treatment for these intermediary cases?

These divide themselves into two groups: (1) A group with general suppurative peritonitis, and for this the only help is immediate operation, but these are the small minority of cases. (2) The large majority of cases are those where the disease has localized itself; so much localization is there that if you treat it with proper dietetic and medicinal treatment, you will carry your patient through. If you attack it in the hope of eradicating the septic mischief you will fail. If you attack it you will find that you have caused that focus to extend itself beyond this localization; you run a serious risk of opening into the peritoneal cavity and so courting disaster. Is there risk in leaving that condition? I say "No," if you supplement it with proper medicinal treatment. I speak now of hospital cases. I have exactly the same kind of cases as my colleagues. During the past fourteen years I have adopted the measures I am speaking of, and of 273 cases 264 recovered; of these 256 were operated on subsequently—that is, after what I call the intermediary stage was passed—and 8 refused operation. Now, this cannot be a matter of luck. When one estimates one's cases over a number of years the question of luck does not come in at all. The medicinal measures I adopt are: Moderate starving, rest to the intestine by opium in the form of Dover's powder combined with bismuth, enemata every second day, local warmth in the form of poultices. In a short time the patient responds; you have assisted Nature, you have brought the case into the interval stage in which there is no mortality. I contend that the intermediary cases are in a class by themselves, that can best be met by local measures, and only in some instances require immediate surgical treatment.

Mr. W. J. GREER (Newport, Mon.) said that it was a matter of great importance that students should be taught the necessity for immediate operation in appendix cases. These cases should as soon as possible be brought into hospital or into the surgeon's hands.

Mr. CUTHBERT (Gloucester) strongly advocated operation at the earliest possible time. This applied more especially to children, who should not be left a single day. In his experience it was not best to take statistics from hospital patients; it was amongst the well-to-do people that appendicitis was most fatal.

Mr. C. H. FAGGE (London) was entirely opposed to the doctrine put forth by Sir George Beatson. He himself did not pretend that if he operated on the fourth or fifth day he would get a result as good as if he operated on the first or second day. He found that the majority of general practitioners and physicians were really anxious to get surgeons to see the patients at once. The keynote for treatment in the intermediary cases was to operate at once. He thought the doctrine of delay even in some selected cases was one of the most pernicious and mischievous put before the profession during the past few years.

Dr. COLLINSON (Preston) realized the necessity for teaching the general practitioner that he was not to use his own judgement; as a rule it was the surgeon who was the best judge as to whether a case should be left or should be operated on. Most were agreed that if the temperature were still high after four or five days it was known that pus was present. He would like the Section to lay down a strong rule on the matter.

Mr. G. P. NEWBOLT (Liverpool) said that he went on the principle that it could not be told what was the state of affairs inside the abdomen till it was seen. He therefore operated at the earliest possible moment.

Mr. C. A. MORTON (Bristol) called attention to the fact that the five fatal cases were all cases of either diffuse peritonitis or were complicated by intestinal obstruction. He quite agreed with Sir George that the results of operation in cases in which the operation was performed some days after the onset of the disease were not as good as after operation performed within the first twenty-four hours, but that did not indicate that cases should not be operated on a few days after the onset of the disease, and it was the surgeon's misfortune that he did not get the opportunity to operate earlier. He also quite agreed with Sir George Beatson that statistics did not show as good a result in the treatment of appendicitis as surgeons wished, but that was because the surgeon often did not get the chance to operate early enough. Sir George Beatson had stated that he would certainly advise operation in diffuse peritonitis, but the difficulty was that the surgeon often found diffuse peritonitis already present when he had only diagnosed a quite localized lesion. It was quite impossible to be certain from the symptoms and physical signs that the disease was really localized. Sir George Beatson had referred to the well-known resisting power of the peritoneum, and used it as an argument that we might safely leave cases after the first few days without operation, but he thought that toleration of the peritoneum to infection might more reasonably be used as an argument for operating on localized collections of pus, for it might be very valuable if infection of the peritoneum did occur during the operation, though in his experience such infection was a very rare thing indeed. Then Sir George Beatson had described to them what medical treatment should be employed in cases not operated on, and he had told them that an enema should be given every other day. Now, surely it was advisable to keep the large bowel quiet, and not to stimulate it with enemata, for collections of pus around the appendix were generally shut up in the neighbourhood of the caecum, and if the case were not operated on, the next safest thing to do was to keep the colon as much at rest as possible, so that protective adhesions might not be disturbed.

Mr. H. J. STILES (Edinburgh) said that he could not agree with the treatment advocated by Sir George Beatson. He held that the cases should be operated on at once, even though not seen till the fifth, sixth, or seventh day of illness. He admitted that more of these cases were lost than should be. The mortality ought to be reduced. He did not think that the dexterity or capacity of the surgeon entered very materially into the question. One of the great causes contributing to excessive mortality was the use of chloroform rather than ether. He was absolutely convinced of that. A patient ill for four or five days had suffered four or five days' severe toxaemia. That toxaemia was of bacterial origin, and these toxins had already poisoned the liver. By the administration of chloroform they were adding another poison of liver cells. Chloroform should never be given to a patient suffering from septic toxaemia. Since giving up the use of chloroform and adopting ether instead in these toxaemic cases, his statistics had improved enormously. His next point was that Sir George Beatson still had apparently the old fear of the peritoneal cavity. The peritoneal cavity should be opened thoroughly; the incision should be big enough to allow one to see what was there. Many appendices were left behind which should be removed. He quoted with approval the practice of a Los Angelos surgeon, who removed every appendix, no matter how ill the patient was. That surgeon's results surpassed any he knew. The appendix itself was the great source of toxaemia; by its immediate removal the toxaemia was cut short and the convalescence much diminished. One important medicinal treatment was washing out the stomach. He employed that means frequently, and knew that many cases had been lost through neglecting that measure. There was only one condition in which he would recommend delay in operating: that was where the patient had general peritonitis with acute intestinal obstruction. If that patient had been ill for seven to nine days he could wait twelve hours more, and that time could be devoted to washing out the stomach. The obstruction was in the small intestine, as a rule high up, and the stomach was full of putrid material, which ought to be washed out. The last cause of excessive mortality was washing out the peritoneal cavity; that resulted in diffusing the pus all over the cavity. He did advocate washing out the peritoneal cavity in perforation of stomach or duodenum where gross particles of food were present and had to be got rid of.

Professor IRVING CAMERON (Toronto) said that he wished to associate himself with the position taken up by Sir George Beatson. He made it a rule never to operate on cases which had gone on for five days if the treatment

advocated by Sir George Beatson, which was on the same lines as recommended by Ochsner, was adopted. He found that in many cases operated on prematurely there was nothing whatever wrong with the appendix, even though the symptoms of inflamed appendix had been present; perhaps these had been cases of typhlitis or perityphlitis. He approved of washing out the stomach in cases of acute appendicitis.

Mr. Herbert Paterson said that the ideas given expression to by Sir George Beatson and Professor Irving Cameron were antiquated. He thought that the intermediate cases did not present the difficulties and dangers to which Sir George Beatson alluded. He had had no answer to his question: "Can or can not Sir George Beatson say what is the condition of the appendix and which cases will recover and which cases will go on to a fatal termination?" The only reply he had heard was that if the appendix mischief was localized it did not matter what the patient's condition was.

Sir George Beatson explained that he was always guided by the pulse and temperature and their relation to one another, and by the local abdominal conditions. If there was a general rigidity of the abdomen and pulse and temperature not in harmony, then it was a case for immediate operation. If there was localized right-sided rigidity with pulse and temperature high, but keeping together, and if afterwards the blood count went down, then and then only did he operate. Some of these acute cases were operated on in ten days, when, with a high blood count and pulse and temperature normal, pus was indicated.

OBSERVATIONS ON THE LACERATION OF LARGE ARTERIES.

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The fact that a large artery may be completely torn across or divided by a blunt agent without fatal haemorrhage necessarily resulting is well known; it is mentioned in practically all textbooks of surgery.

The lesion is caused by such a force as is exerted on the vessel in avulsion of a limb; or in division by some blunt agent which contuses and lacerates the vessel wall (with or without a wound of the superficial tissues of the part); or, in subcutaneous rupture, by a violent wrench. It is noticeable that authors do not state that occlusion and resulting haemostasis constantly occur. They seem to be content, as a rule, with stating the probability.

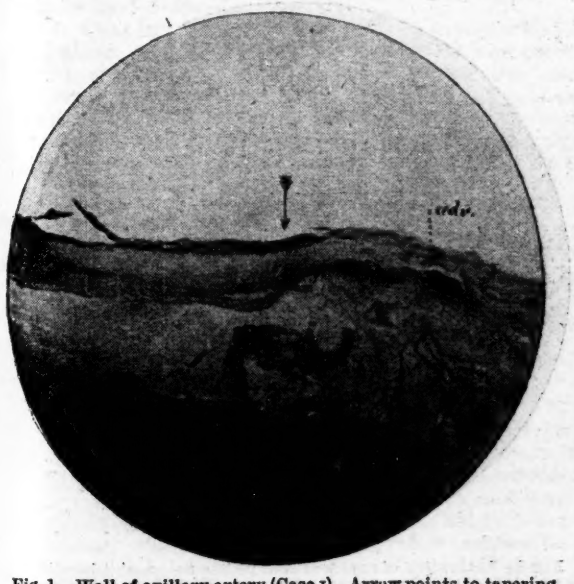

Fig. 1.—Wall of axillary artery (Case I). Arrow points to tapering of inner coats at seat of division. Lower half of field occupied by blood clot. × 12.

In their descriptions of the condition, also, writers are agreed as to how haemostasis is brought about. It depends on two factors—the curling up of the media and intima and the formation of a thrombus. This curling up of the inner coats may occlude the lumen of the injured vessel, or "at least favour the development of an obturating thrombus" (Lexer[1]). The adventitia also takes part in closing the open end of the vessel. It may simply be drawn out "to form a thin band of tissue" (Lexer[2]); or it may be folded over the retracted inner coats (Pepper[3]), or it may be drawn out and twisted (Erichsen[4]), the last seeming to form a very efficient aid to the prevention of haemorrhage.

I am not sure that this elongation of the adventitia is entirely due to the original violence. I think that, to any one who has had the opportunity of observing the occluded stump pulsating, the feeling must occur that the thudding of the thrombus against the inner surface of the adventitia must, to a certain extent, share in producing the elongation. It seems also from such observation that the occlusion is not very secure, and that the thrombus might easily be dislodged by movements.

A point to which attention may be drawn is the *condition of the vessel wall previous to the accident.* It might be thought that the inner coats of a healthy wall would more easily curl up after division, but that a healthy vessel would be more likely to escape injury from external violence. On the other hand, a calcified wall, being more brittle, would be more easily injured, while curling up would not take place so readily. But, as will be seen from the cases reported below, these ideas are not supported by facts. Of these cases, two were examples of external violence. In one the vessel wall was apparently healthy, and here the curling was by no means pronounced. In the other there were distinct calcareous changes in the media, and the intima was atheromatous. In this case curling up had occurred to a marked degree. This is in keeping with Dr. F. C. Wood's statement that while in the case of an artery thickened by disease retraction is not always possible, and that severe and occasionally uncontrollable haemorrhage is likely to result from a wound of the vessel, still, if "the injury to the vessel is due to crushing or tearing of the tissues, the edges of the inner layers of the vessel may curl up inside the lumen and partly close it."[5]

The question of precedent changes in the vessel wall is important in the case of a rupture by a violent wrench, as in Case III. Here atheroma was noted, and it is probable that it predisposed to the rupture which occurred.

With these preliminary remarks, I shall now proceed to describe shortly three cases which were under my care some time ago.

Fig. 2.—Branch from axillary artery (Case I). Arrow points to seat of division of inner coats. To right is prolongation of adventitia. × 12.

Case I.—*Upper Limb Severed Close to the Shoulder, Axillary Artery Torn Across.*

R. K., aged 24, was admitted to the Western Infirmary on December 8th, 1906, shortly after having been run over by a locomotive. The left upper limb had been practically severed from the trunk, being attached by skin only, on the inner side;

and there was a fracture through the surgical neck of the humerus 5 cm. below the lowest part of the anatomical neck. There was no bleeding. An incision in the axilla, in the line of the artery, exposed the vessel, torn across. Just above the torn end a branch of the main vessel was found torn through about 0.5 cm. from its origin. The torn ends of main vessel and branch were closed by clot which extended along inside the main artery to above the origin of the branch. Although pulsation was vigorous, the clot was firmly held in the vessel. A ligature was applied about 2.5 cm. above the torn end, which was then cut away, and disarticulation at the joint was performed. The man made a satisfactory recovery.

The injured end of the vessel was examined microscopically by Dr. Leonard Findlay, who reported that the lumina of both trunk and branch contained a thrombus which projected a distance of 1.4 cm. beyond the vessel. To the naked eye the vessel wall appeared as a thin, pale strand of tissue embracing the thrombus, and towards its distal extremity ceasing abruptly. Sections examined under the microscope (Figs. 1 and 2), however, and especially those treated with Weigert's elastic stain (Fig. 3) showed the adventitia extending almost to the tip of the thrombus, the two inner coats stopping short of the adventitia by 1.4 cm. The adventitia thinned out towards its free end; the media tapered somewhat, and the most internal fibres were directed inwards from retraction of the coat. Small portions of the vessel wall were found detached and lying in the substance of the clot and towards its free surface immediately under cover of the stretched adventitia, so that there had apparently been considerable laceration.

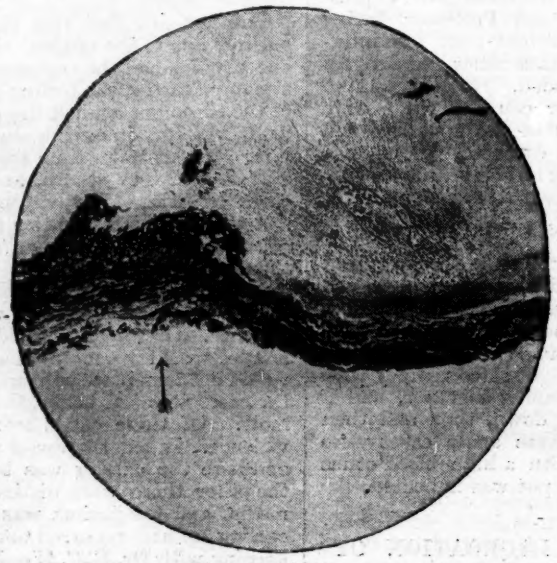

Fig 3.—Same as Fig. 2. Weigert's elastic stain. Curling inwards of internal fibres. Photomicrograph by Dr. L. Findlay. × 24.

This, then, is an example of laceration of a large artery by external violence. The vessel was previously healthy, and the retraction of the inner tunics, formation of thrombus, and prevention of fatal haemorrhage corresponds with what we are familiar with in textbooks of surgery.

Fig. 4.—Laceration of ulnar artery (Case II). Curling in of inner coats. *c*, *c'*, Ragged cavities from which calcareous masses torn during cutting of section. × 12.

CASE II.—*Forearm Crushed, Artery Torn Across.*

R. C., aged 56, hole-borer, was admitted to the Western Infirmary on September 10th, 1909, shortly after having had his right forearm caught between two cogwheels. There was a large lacerated wound of the ulnar side of the limb, with free bleeding from the superficial veins. The soft tissues were pulped and the ulna extensively comminuted. The ulnar artery had been torn across below its middle, and the end of the upper portion, completely plugged by clot, was lying free in the wound and was not bleeding. The circulation in the hand was fairly good. A ligature was applied round the ulnar artery proximal to the torn end, which was then removed for examination. The wound in the limb was treated antiseptically, and, after a prolonged stay in hospital, the patient made a satisfactory recovery.

Dr. Shaw Dunn, who examined the portion of vessel removed, found that the coats were stretched and torn and turned inwards, the adventitia projecting beyond the media and intima. The lumen was blocked by recent thrombus in which there was no appearance of organization. Just about the level of the tear there was well-marked calcareous degeneration of the media (Fig. 4), and the intima appeared to have been somewhat thickened from atheroma.

Here we have an injury severely crushing the tissues of the limb, with comminution of bone, and involving one of the large arteries. In this case the artery was divided completely across. There were degenerative changes in its inner coats, but occlusion had taken place satisfactorily. The lesion of the vessel was easily discovered in the course of cleansing the wound.

CASE III.—*Rupture of Popliteal Artery.*

Alex. B., aged 20, was admitted to the Western Infirmary on June 21st, 1909, with gangrene of the right foot and lower half of the leg. Two days previously he was playing football, and, while making to kick the ball, he fell with some violence with the leg extended. He noticed immediately after the accident that there was a swelling in the popliteal space, and there was severe pain there and in the leg. By the following night signs of gangrene of the foot appeared; and next day, when he was sent into hospital, there was undoubted gangrene up to the middle of the leg, and severe pain continued. It was thought probable that he had ruptured the popliteal artery, and, in the absence of marked swelling, that the torn vessel had been occluded by clot. There was no history of syphilis, nor were there any signs of that disease; but it was noted that the arteries at the wrist seemed unduly prominent for a man of his age.

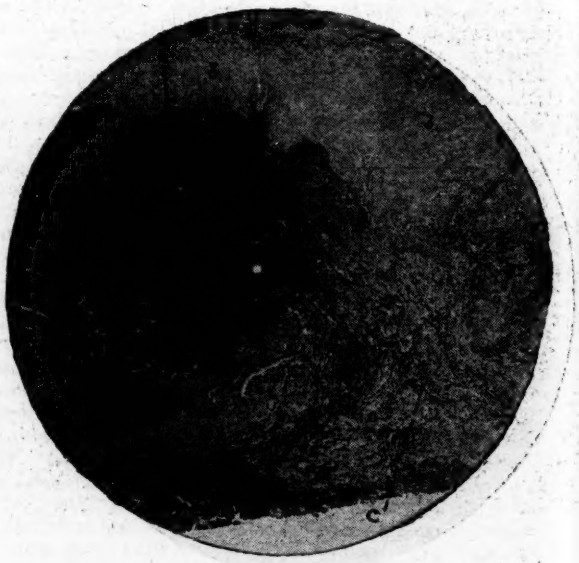

Fig. 5.—Laceration of popliteal artery (Case III). *a*, *a'*, Adventitia. *b b b*, *b' b'*, Curled-in inner coats. *c*, Thrombus undergoing organization. × 12.

An attempt was made to bring about desiccation, but without

success. He developed high temperatures, and showed signs of toxic absorption, and a Lister-Carden amputation was performed on July 1st. At the level of the division of the vessels by the knife the popliteal artery was found blocked by thrombus. Recovery was satisfactory, although delayed by considerable post-operative extravasation and retention of blood in the cavity of the wound.

Dissection of the amputated limb showed infiltration of the tissues with blood and a rupture in the lower part of the popliteal artery. The seat of rupture was closed by clot.

The vessel was submitted to Dr. Shaw Dunn for microscopical examination, and he found that the media and intima were sharply torn across (Fig. 5), and the lumen of the vessel filled by thrombus undergoing organization. Beyond the tear were portions of the wall in semi-necrotic condition. Above the seat of rupture was evidence of slight early atheroma.

In this case the wound was subcutaneous, and the trauma of the nature of a violent wrench, acting on the vessel wall, which was slightly atheromatous. When the parts were dissected it was seen that there had been considerable extravasation of blood, and the clot at first rather obscured the details of the injury. The complete shutting off of the circulation and the failure to develop a collateral supply resulted in gangrene. The failure of the collateral circulation may have been partly due to atheroma in the collateral vessels or to a high extension of the thrombus so as to obstruct their orifices of origin; but I believe that the pressure of the extravasated blood in the neighbourhood may also have had a share in its production.

It is interesting to find degenerative changes occurring in the vessel wall in a young subject, and this case recalls instances of popliteal aneurysm in children.[6]

Remarks.

Diagnosis.—In the cases which form the subject of the present communication the diagnosis was very quickly made in the first two, where the treatment involved a thorough inspection of the parts. While the diagnosis was not a matter of importance in Case I, it was otherwise in the second patient, where the attempt was to be made to save the limb. The nature of the injury and the careful inspection and cleansing of the wound led to the discovery of the arterial lesion, and consequently to the ligation of the wounded vessel.

In Case III the points I had to go on were the history of localized swelling following a strain, and pain extending from the seat of swelling down the limb, the onset of gangrene, and the suspiciously prominent vessels at the wrist. These, taken together, indicated the nature of the lesion; but even here the diagnosis was not a matter of vital importance, as there was only one course of treatment possible.

Treatment.—Apart from the question of treatment of the injured limb the course to be pursued with regard to the vascular lesion was obvious. I do not think that any surgeon would care, in the case of the large arteries, to trust to the security of natural haemostasis alone, and it therefore seems hardly necessary to insist on ligation above the torn end.

Conclusion.

We have in the above cases examples of laceration of large arteries by (1) crushing injuries and (2) violent strain. In Cases I and II I could not say whether there had been any great loss of blood, as whatever there had been had escaped through the external wound before I saw the patients. But when examined after admission into hospital complete haemostasis had been established.

In Case III, where there was no external wound, the extravasation and infiltration found on dissection represented the total haemorrhage, and while marked it was less than may be found accompanying a punctured wound of an artery.

In all three the disposition of the tunics of the vessel wall was similar; but in Case I only slight curling inwards of the inner coats was noticeable. It may be, however, that these coats were more markedly curled immediately after the artery was severed, and that they were straightened out by the thrusting action of the thrombus.

The retraction and curling up of the inner coats was well marked in vessels showing degenerative changes.

References.

[1] Lexer, *General Surgery*, translated by Lewis, London, 1908, p. 552. [2] Ibid, p. 553. [3] Pepper, in Heath's *Dictionary of Practical Surgery*, London, 1886, vol. i, p. 92. [4] Erichsen, *Science and Art of Surgery*, tenth edition, London, 1895, p. 408. [5] Wood, in Keen's *Surgery*, London, 1906, vol. i, p. 396. [6] Syme's *Contributions to Pathology and Practice of Surgery*, Edinburgh, 1848, p. 183.

SURGERY OF THE SACRO-ILIAC JOINT.

By W. I. de Courcy Wheeler, B.A., M.D.Dubl., F.R.C.S.I.,

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The difficulty I experienced in obtaining from current literature precise information in the study of three recent cases of sacro-iliac disease is my excuse for offering a short contribution to the surgery of the joint. To deal with this subject and to estimate at the proper value the present position regarding the diagnosis, prognosis, and treatment of sacro-iliac disease it is necessary to recognize certain gross anatomical and pathological facts.

The sacro-iliac is a diarthrodial or amphiarthrodial joint composed of two great masses of very vascular cancellous bone enclosing a negligible synovial cavity.

There is no *post-mortem* or operative evidence to show that disease ever originates in the synovial cavity, and the possibility may be dismissed from the field of practical surgery.

On the other hand, the cancellous bone of the ilium or sacrum is a suitable nidus for the development of a tuberculous or septic focus such as is so commonly found in the metaphysis of long bones (Fig. 1). To the surgeon contemplating operation the great posterior sacro-iliac ligaments and the excessive thickness of the iliac bone in the region of the posterior spine offer a powerful barrier (Fig. 2). The posterior ligaments are of primary importance, supporting as they do the weight of the superimposed trunk on the pelvis.

In contrast to the great thickness of bone in the posterior region of the joint there is but a shell of iliac bone occupied by the gluteus medius muscle covering the articulation on the outside.

The lumbo-sacral cord bears a direct anterior relation to the joint, hence the frequent presence of sciatica at the onset of sacro-iliac disease.

Diagnosis.—It is necessary to go back a number of years before finding in the literature anything but a passing mention of the symptoms. Erichsen gave us the classical description which detailed five cardinal symptoms—pain, lameness, changes in the attitude of the limb, swelling and abscess.

But do these symptoms bear investigation? The pain is far from being characteristic if it exists; lameness conveys nothing to a surgeon with an open mind; changes in the attitude of the limb occur in almost every pathological lesion of the lower extremity; swelling and abscess herald a vast destruction of the joint, which often cannot be checked by surgical means. If these symptoms are to be definitely established before the recognition and treatment of sacro-iliac disease it is courting disaster, and the reason why the prognosis is so exceptionally bad at once becomes obvious.

One is reminded of the words of Mayo when describing another disease—that a case with these symptoms already present is one for an undertaker and not for a surgeon.

Signs, such as pain on crowding together the iliac bones, tenderness in the front of the joint as examined per rectum, scoliosis with drooping of the pelvis, wasting of the muscles, and pain on heavy percussion behind, may be taken as occurring late, after advanced disintegration of the joint. Such symptoms cannot be elicited at the onset of a focus in the sacrum or ilium, or in primary synovial disease, if such ever occurs.

Too much emphasis cannot be laid on the fact that the textbook signs and symptoms are only present when there is extensive destruction, and although the picture is then unmistakable the time is past for successful surgical interference. In the great majority of cases the disease can be recognized at the onset with the same precision as in other joints. For example, all cases of persistent sciatica should be considered as suspect, no matter at what

age. The disease has been described in patients of 5 years and in patients over 60, but the most active years of life, from 15 to 35, should be watched with most suspicion. The sciatic pain in sacro-iliac disease often stops at the knee, and, in addition, radiates upwards into the sacro-lumbar region over a wide area. In more advanced cases the pain may be accompanied by tenderness over the course of the superior gluteal nerve.

The general movements of the patient, notwithstanding the free and unimpaired action of the hip-joint, are restricted, and there is obvious difficulty in turning or assuming a comfortable position in bed.

An acute onset with considerable rise of temperature was found in the first case I have to record in this paper.

If under ordinary treatment there is not a rapid subsidence of the pain and discomfort alluded to, no time should be lost in obtaining a good radiograph of the pelvis. The line of the sacro-iliac joint is admirably seen, and the absence or presence of disease recognized by comparison with the opposite side.

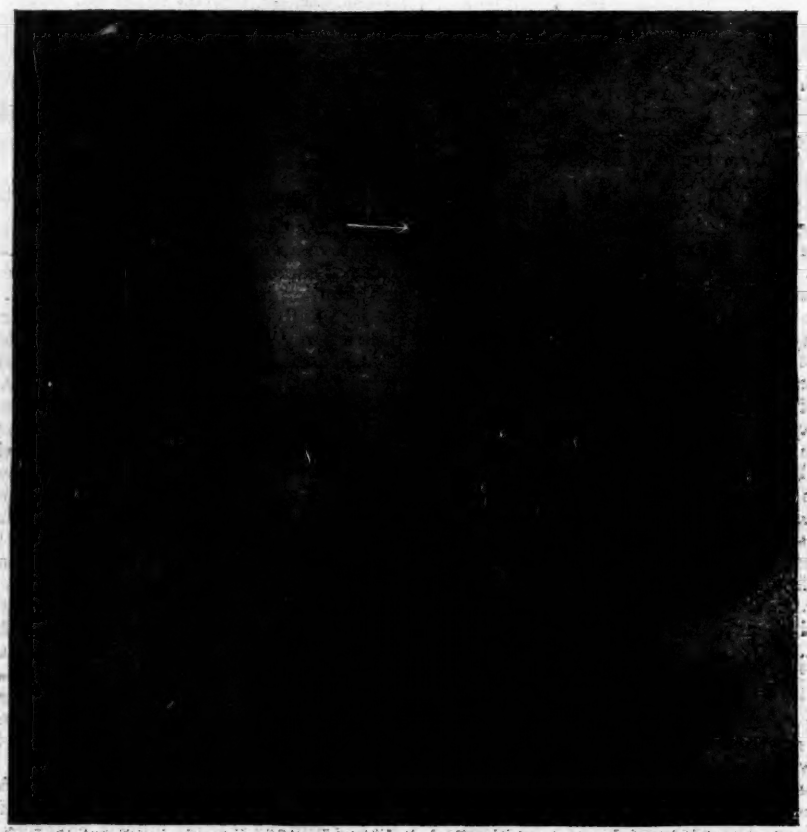


Fig. 1.—X ray showing a focus in the upper portion of the sacro-iliac joint in a patient with "sciatica."

The prognosis of sacro-iliac disease once suppuration has set in is admitted by all to be bad. Erichsen never saw a patient recover after full development of the disease and after suppuration had set in. Makins, on the other hand, describes several cases on which he operated with success after the formation of abscess, and urges the necessity of treatment of the joint along exactly the same lines as for diseases of joints in general. Stiles describes operation on late cases through the posterior route, but reminds us of the very unsatisfactory results. Tubby found in 38 cases of the suppurating form of the disease that without operation there were only three cures, death usually occurring from septicaemia or secondary tuberculosis. Tubby, however, points out that the prognosis is favourably influenced by the thorough removal of diseased bone and the proper treatment of the abscess cavity. He adds that if the cases are seen early and placed under treatment the prognosis is on the whole favourable.

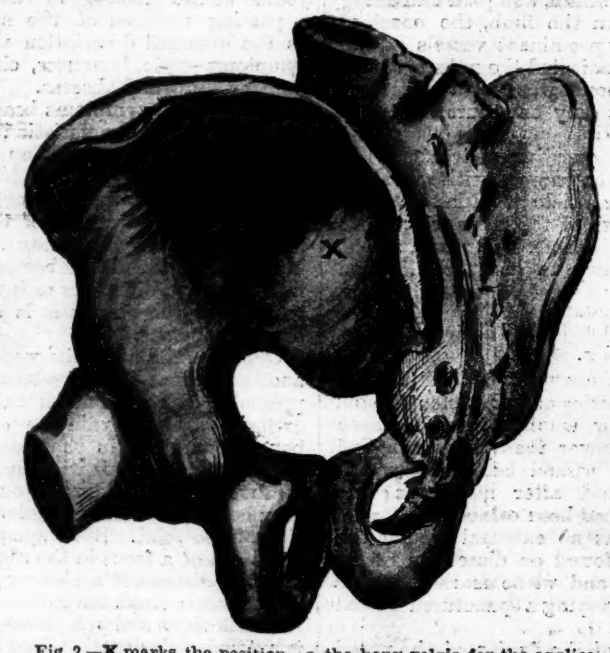


Fig. 2.—X marks the position on the bony pelvis for the application of the trephine or drill to expose the sacro-iliac joint.

The treatment of sacro-iliac disease, if the diagnosis can be established at a reasonably early period, is in no way different in principle from the treatment of other joints. The indications for operation will be the same, and the cases which will recover by conservative management can be selected.

It is with the operative treatment of sacro-iliac disease that I propose to deal in this necessarily incomplete communication. If there is a tuberculous or septic focus present in the sacrum or ilium, as shown by a skiagraph, it should be exposed and removed here, as elsewhere, in as complete a manner as possible. The joint is not inaccessible, and its anatomical relations are such as to make bold the most timid of surgeons. The joint must be laid open by precise surgical methods, and on no account is the bone to be reached by following up existing sinuses. Mr. Golding-Bird and Mr. Makins have laid stress on this point.

It is apparent, notwithstanding earlier attempts to treat sacro-iliac disease in a rational manner, that *x*-ray photography and aseptic technique have not been utilized to develop the surgery of the joint.

Textbooks on surgical anatomy are as silent on the subject as are the surgical works; the points which might be of use to the operating surgeon are carefully omitted.

For obvious reasons, attempts to expose the articulation from behind are faulty (Fig. 3). By this route the powerful posterior sacro-iliac ligaments offer a barrier which, if broken down, interferes immeasurably with the suspension of the sacrum and superimposed trunk on the iliac bones. Injury to these structures can only be repaired by bony ankylosis after very prolonged rest. Similarly, an exposure of the joint immediately in front of the posterior iliac spine is rendered difficult by the great thickness of the strong attachment of the gluteus maximus, and by the bone in this region.

On the other hand, in the centre of the fossa occupied by the gluteus medius muscle, about 2½ in. in front of the posterior spine, the bone is thin, and through this a drill

or trephine will enter the front of the joint at its highest point.

The exact position can be ascertained on the bony pelvis by joining a point marking the junction of the posterior and middle thirds of the crest of the ilium with the anterior extremity of the sciatic notch. The central point of this line marks the upper and front portion of the sacro-iliac joint.

The first impression on viewing this point on the bony pelvis, and still more so when the soft parts are *in situ*, is that it is considerably in front of the joint, and in this situation the drill or trephine would enter the pelvis. That such is not the case is easily verified.

Assuming that an *x*-ray photograph demonstrates an osseous focus in an early case of sacro-iliac disease, the operation is carried out as follows: The anterior and posterior iliac spines are marked while the patient is standing. (It is easier to accurately find the posterior spine lying at the bottom of a distinct dimple with the patient in the erect position.)

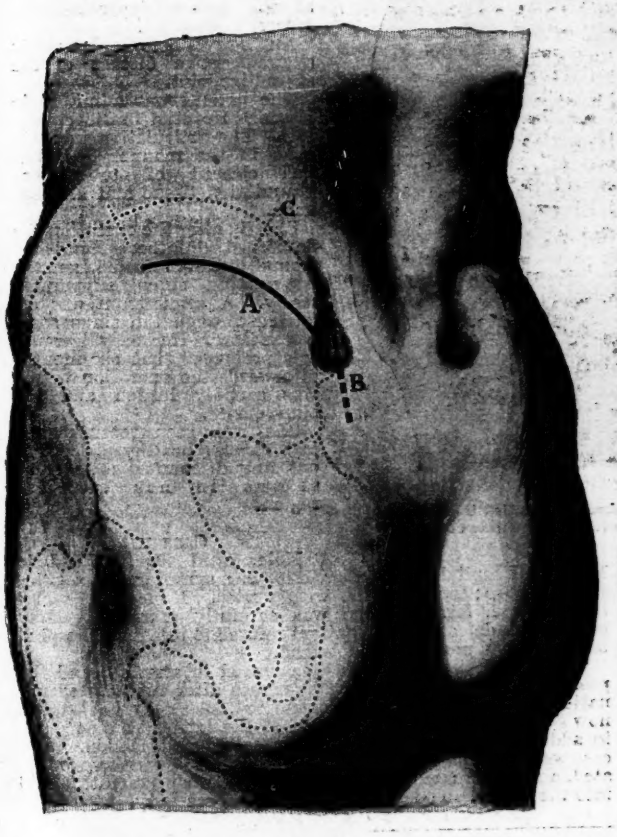


Fig. 3.—A shows the best line of incision, the mid-point of which corresponds to the junction of the posterior third with the anterior two-thirds of the iliac crest. B shows faulty approach to the joint.

The patient is placed in the position familiar in kidney operations, and the point marking the junction of the posterior and middle thirds of the crest of the ilium ascertained. A curved incision 4 in. long is made 1 in. below the crest of the ilium, the centre of which corresponds to the point thus indicated (Fig. 3).

The superficial fatty tissue here is strong and well-marked, and lying deep to it is the strong aponeurosis covering the gluteus medius muscle.

These fasciae are divided in the length of the incision together with the underlying muscle fibres, and the bone is exposed (Fig. 4).

The bone is cleared with a periosteal elevator and the tissues retracted downwards. A finger now feels for the sciatic notch, and the drilling of the bone is commenced midway between this and the crest of the ilium. The best instrument is Doyen's burr with bit and brace (Fig. 5). It should be inclined slightly backwards until the joint is reached. If the bone is removed later with gouge or chisel in a slightly forward direction the pelvic fascia underlying the iliacus muscle can be felt in front of the joint, and an abscess in this position evacuated at the very earliest moment.

If further exposure of the joint becomes necessary, the bone is gouged away in a downward direction towards the front of the sciatic notch and backwards towards the posterior inferior spine if the disease is more located in the posterior portion.

Throughout the operation it is not necessary to ligature any important vessel or to injure the superficial nerves which lie to the front. The position of the incision is an admirable one, for this area lies developmentally between two sets of blood vessels, the segmental above and those for the limb below.

Before illustrating the remarks just made by a very brief mention of three cases, I would like to emphasize the following points:

1. The disease once well established is a very fatal one.

Fig. 4.—The skin and superficial fascia divided, exposing the strong aponeurosis covering the gluteus medius muscle.

2. Radical treatment in the early stages is frequently indicated and offers a good chance of recovery.

3. The signs and symptoms usually described do not exist in the stages of the disease in which treatment promises most.

4. Vague and persistent pains in the sacro-gluteal and lumbar regions, especially referred down the sciatic nerve, when there is no history of previous similar attacks which got well, should arouse suspicion of sacro-iliac disease, no matter what the age of the patient.

5. An *x*-ray photograph gives valuable information.

6. Early operation to expose and remove the focus of disease is indicated in this joint as in others.

7. The joint is not inaccessible, and is easily reached through the iliac bone in the centre of the fossa occupied by the gluteus medius muscle.

A very brief description of three cases will suffice to illustrate the remarks just made.

CASE I.

Mr. R., between 40 and 50 years of age. Symptoms came on acutely. He was apparently in perfect health, until coming in one evening after exercise he developed acute pain in the course of his sciatic nerve, which did not

extend below the knee. His temperature for several days reached 102°. For a week he was treated for sciatica and influenza. The temperature fell, and the pain became less, but the general discomfort about the sacro-gluteal region was increased. Thus he could not with any comfort turn in the bed or change his position. It gave him great pain and trouble to get out of bed. Yet on examination all the movements of the hip-joint were perfectly free; no pain was caused by forcibly crowding together the iliac bones. There was no tenderness on rectal examination. Sacro-iliac disease was carefully searched for. For a month nothing but palliative treatment was adopted, there being no evidence of bony disease. The patient in the meantime was improving, though his temperature was never settled, reaching 99° and 100° after intervals of no fever.

Fig 5.—Drill (directed slightly backwards) applied to the bone midway between the sciatic notch and the iliac crest.

He was allowed up and out for drives, but the discomfort in the sacro-gluteal region was never absent, and leaning on his sound leg produced more pain on the opposite side. An *x*-ray photograph demonstrated an early focus in the bone on the iliac side of the joint, apparently secondary to synovial disease. I proceeded to operate in the manner already indicated. The opening in the bone struck the front of the joint, and after a little gouging in an anterior direction about half a drachm of pus was evacuated. The finger could feel the pelvic fascia deep to the iliacus muscle, and was carried into the small abscess cavity leading underneath the bone towards the sciatic notch. The overhanging bone was gouged away, and the little cavity filled with sublimated iodoform and bismuth paste. After the operation the pain and discomfort disappeared, and the wound healed without drainage. A weak spot developed in the scar a fortnight afterwards, and on introducing a probe a little serum and bismuth were extruded. Each day there was a little bismuth on the pad covering this point. In eight weeks the patient was sent home. Six months after operation, Dr. Rensen, a distinguished Continental surgeon whom he consulted, wrote to me as follows: "Mr. R. is now quite well. The little fistula has closed after one injection of bismuth and vaseline. He has augmented his weight, and walks upright without any support." A year later this gentleman was in perfect health.

CASE II.

This was a girl who, in December, 1910, complained of "sciatic" pain from the hip to the ankle. She was treated with liniments, but finding no improvement, was admitted into a Dublin hospital about eighteen months ago and was detained for six weeks. After another interval, as her pain increased, she sought admission to another hospital, where, after treatment for sciatica, an abscess formed and opened on the outer aspect and below the left gluteal fold.

For four months the sinus discharged; she became more and more incapacitated, and appeared in a crippled condition at the extern department of Mercer's Hospital.

An *x*-ray photograph readily showed active disease of the sacro-iliac joint.

The patient was admitted to Mercer's Hospital in November, 1911. The articulation was laid open in the manner described and cleared of tuberculous granulation tissue and diseased bone.

Shortly after the operation she developed diphtheria, and the wound, already infected from the pre-existing sinus, suppurated freely. A sequestrum was extruded through the sinus some weeks later. Her convalescence was prolonged, but six months afterwards the operation wound was soundly healed and the sinus closed.

She was seen recently and is a strong, healthy girl, without any discomfort save some stiffness in her sacro-iliac region.

CASE III.

Male, aged 49, admitted to Mercer's Hospital, September, 1910, with symptoms of sciatica and lumbago; urine loaded with urates. No signs of sacro-iliac disease, for which he was carefully examined. *X*-ray photograph defective; the patient refused to remain in hospital until a second picture was obtained.

"Sciatica" and "lumbago" increased in severity, and the patient sought readmission. One month after his first examination an iliac abscess could be detected. An *x*-ray photograph now showed extensive destruction of the left sacro iliac joint, in addition to a focus in the lumbo-sacral articulation. The case was treated along conservative lines, the abscess was evacuated, and sublimated bismuth and iodoform paste introduced into the cavity. The patient made a good recovery.

THE LIGHTING OF OPERATION TABLES.

Demonstration.

DR. F. W. COLLINSON, of Preston, gave a demonstration of an electrical lighting system devised by him for use when operating at a private house. It consisted of a 12-volt accumulator battery and a telescopic upright, which could be clamped to the edge of the table used, and would support two 12-volt lamps of from 16 to 32 candle-power. The lamps could be easily and readily fixed upon the table in any position and turned in any direction for an operation with a patient in any recognized position. One of the lamps could be replaced by a head light, leaving the other in its position over the patient. The accumulator battery had a capacity of 40 ampère hours, and would keep the two lamps alight for six or seven hours. It could also be used for lighting a sigmoidoscope, urethroscope, cystoscope, and the like, and could be fitted so as to heat a cautery. The accumulator weighed about 44 lb., and the rest of the appliance about 20 lb.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL

EXCESSIVE INGESTION OF SALT PRODUCING OEDEMA.

ON September 8th I was asked to see a child 2 years old who was said to be very much swollen. The hands and feet were both markedly oedematous, and the face was stated by the mother to be very puffy every morning. Examination of the chest did not reveal any abnormality, and a urine analysis failed to show anything wrong with the kidneys.

A remark of the child's grandmother, however, seemed to me very significant. She said the patient was very fond of salt, and when he got the opportunity he promptly consumed the contents of the salt-cellar.

Thinking this might be the cause of the oedema, I ordered him to have no salt with his food and suggested that no salt should be left on the table within the child's reach. As his tongue was rather white a simple mixture containing magnesia and tinct. card. co. was prescribed, and a dose of castor oil to be given that night at bed-time.

On calling four days later I was gratified to find that the oedema had entirely disappeared, and that the child seemed in its usual state of health.

South Shields. JOHN BAIN, M.B.

ALLYL SULPHIDE IN TUBERCULOSIS.

The communication of Dr. Minchin in your issue of August 24th, p. 460, on the subject of the treatment of phthisis by means of the active principle of garlic—allyl sulphide—and which was called forth as a result of your leading article upon tuberculosis treatment, is very interesting, especially at the present time when preparations are being made for the establishment of hundreds of State-promoted sanatoriums throughout the country, and an advance in the management of the disease demands more logical treatment than that dependent alone upon fresh air and a few vaunted but disappointing specifics. The well-known odorous properties of allium proclaim its penetrability, and this combined with its power as a germicide makes it an ideal inhalant in every stage of phthisis pulmonalis; its use, indeed, is indicated in every form of tuberculous mischief, and I can speak from the experience of several years past as to its undoubted curative properties, having put it to the test in general practice both in South Africa and this country. The preparations I have always employed have been those made under the direction of the pioneer of this treatment, Dr. Minchin, of Dublin, whose book upon the subject contains invaluable information.[1] Of the cases which I have treated within the past ten years by Minchin's method I will here mention the following:

Case I came under my care in March, 1910, having been sent from an inland county to the sea. She was in an advanced stage of consumption—hacking cough, large amount of thick sputum, loss of weight, vomiting, sleeplessness, aphonia, and fatigue, the usual physical signs, coarse râles, bubbling and fine crepitation, both lungs being involved, the left more extensively; temperature at mid-day 102°; pulse 120. The treatment consisted in bed, fresh air, suitable diet, and the inhalation twice a day of allyl sulphide. As the patient got more accustomed to it in a few days this was increased to three times daily, and then more frequently—indeed, whenever she felt inclined—the allyl sulphide being sprinkled on the respirator designed by Dr. Minchin for the purpose. Within a week an improvement seemed to result in the quality of the sputum, which, instead of being tenacious and difficult to get up, became thin and easy of expectoration; the quantity appeared at first to increase, but I have found that this is not uncommon and consider it a favourable sign; the cough, from being hacking and unnecessarily frequent, became useful and less wearying. The patient began to enjoy refreshing sleep, and after three weeks' continuance of the treatment was able to go out and take gentle exercise. The temperature gradually fell to normal, and in two months she returned to her home, being sufficiently well to undertake a long journey by road and rail.

Case II.—Another case of advanced tuberculosis was that of a patient who suffered from severe haemoptysis, with a large cavity in the left lung; the attacks of bleeding were frequent and alarming. I commenced attendance immediately following on one of these haemorrhages, and found the patient weak and very ill with all the symptoms and physical signs of advanced phthisis. He was placed on Minchin's inhalant, and his condition gradually became better—appetite improved, physical signs less marked, haemorrhage entirely ceased, and he was able to leave for home after two months' treatment.

Of many similar cases which I have treated—and I always adopt the routine practice of allyl sulphide in every case of tuberculosis—I have never seen one that did not materially benefit, lives having been prolonged and suffering relieved through its use.

It is, however, by its specific action upon tuberculous lesions that even more satisfactory results are to be obtained, for here the germicidal effect is unhandicapped by cavities containing shut-away fluid, as in the case of the lungs, which poison the system by their toxins, and are responsible for those cases of intractable phthisis one meets with. The credit of this theory is distinctly Dr. Minchin's, and there is no doubt that it will ultimately be adopted as affording the most rational grounds for surgical interference in tuberculous phthisis.

As an instance of the curative properties of allium when applied externally, or to an open tuberculous cavity, I will quote the following case:

Case III.—A lad of 18, whom I commenced attendance upon in the spring of this year. He had a history of phthisis, and his condition was further aggravated by a large tuberculous cold abscess in the scapular region. It had been aspirated half a dozen times before I saw the case, and by direction of his home physician I refrained from adopting any further treatment at the time, and aspirated once or twice, but the fluid rapidly accumulated. I meantime had the patient on the inhalant, and his health improved. The internal pressure of the abscess contents resulted in a sinus establishing itself through one of the old needle holes, and a chronic discharge followed. After six weeks of daily syringing and draining, the cavity showed no sign of healing. At this juncture, on the advice of Dr. Minchin, I decided to try an ointment of allium sulphide. The effect was magical. As in the case of lung disease, the discharge at first became more copious and watery, and then in a few days commenced to rapidly dry up. In a fortnight not a drop of pus exuded; even on pressure the walls of the cavity became adherent, the sinus closed, and, as far as this condition was concerned, the patient was cured.

With Dr. Minchin, I consider that the drug is an absolute specific in all tuberculous lesions in accessible situations, or in those which can be rendered accessible. It is in the happy combination of surgery and medicine that the successful treatment of phthisis will lie, and the discovery of the germicidal power of allyl sulphide has placed an ideal agent in the hands of the profession towards this end.

Rostrevor, co. Down. John F. Elliott, L.R.C.S.C.P.Irel.

[1] *Treatment of Tuberculosis and Lupus with Allyl Sulphide.* By Wm. C. Minchin, Dublin. Baillière, Tindall and Cox.

ACUTE NEPHRITIS DUE TO TURPENTINE ABSORBED BY THE SKIN.

I was consulted on August 26th by a woman about her daughter, aged 5 years. On August 21st the child had developed a mild bronchial catarrh, to which she is very liable, and the mother had kept her in bed and treated her in the way she usually did. On August 24th she noticed that the child's urine was of an extremely dark colour, and as this persisted she brought a specimen to me. The urine looked like *café au lait*; examination showed the presence of blood in large quantity, and the sample went almost solid with albumen on boiling.

I found the patient in bed, apparently perfectly well except for a slight degree of bronchial catarrh; there was no sign of any oedema, the heart was normal, and there was no suggestion of scarlet fever. The urine was scanty; a sample was sent to a pathological laboratory, and the report received stated:

Serum albumen and globulin in abundance; a number of granular, epithelial, and hyaline casts, with some renal pelvic cells and leucocytes; red blood discs present. There is nothing suggestive of calculus or growth.

There was no pyrexia, nor was the pulse-rate increased. On making further inquiries I was told that the child's back and chest had been freely rubbed with a liniment containing ammonia, camphorated oil, and turpentine. It then occurred to me that the haematuria was possibly due to the absorption of turpentine by the skin. The application was stopped, milk diet ordered, and the bowels freely opened. The condition of the urine being exactly that found in the early stages of acute nephritis, whether caused by cold or by some toxaemia, the case naturally caused a good deal of anxiety; but in a week the amount of blood and albumen gradually diminished, and in ten days had completely disappeared. The child remained quite well all the time, the bronchial signs soon clearing up. A sample of urine examined after a further ten days' interval was normal.

The case may be of interest, since it seems fair to assume that the nephritis was caused by the action of turpentine absorbed from the skin. I can find no reference to this in the books at my disposal. Dixon Mann (*Forensic Medicine and Toxicology*) quotes a case of haematuria due to the absorption of the vapour of turpentine, and probably a far larger amount of the drug would get into the system after a considerable area of skin had been freely rubbed with it several times. The possibility of such ill-effects is worth bearing in mind, seeing to what extent turpentine is employed as a liniment in chest conditions among all classes of patients.

Kenneth Anderson, M.B., M.R.C.S., L.R.C.P.

Banwell, Somerset.

The number of diphtheria intimations in Edinburgh for the week ending mid-day, September 21st, was eighteen, the same as in the preceding week. The number is larger than the average, but is not regarded as alarming. Most of the cases have occurred in one district of the city. The medical officer of health says there is no cause for apprehension, as what is believed to have been the cause has been discovered and dealt with by his department. This is the season when a recrudescence of diphtheria may in ordinary circumstances be looked for.

Reviews.

HAEMATOLOGY IN DIAGNOSIS.

A REVIEW of Dr. ARTHUR PAPPENHEIM'S atlas of blood diseases was recently published in this JOURNAL; his new volume on haematological diagnosis[1] gives the reader an opportunity of coming to closer quarters with the views enunciated by the author in papers scattered in various publications. They are collected in this book and elaborated in such detail that the students and practitioners for whom it is said to be designed may well feel that some mistake has been made, for no one could properly appreciate the book unless he were not only a highly trained technician but an expert in the study of haematology. Dr. Pappenheim in his preface states his object has been to provide a guide for practical diagnosis, avoiding any critical or searching inquiry into the vexed questions of the morphology and genesis of the blood cells; yet we find the first 224 pages little more than a most elaborate exposition of the writer's views on the genesis, morphology, and pathology of the red and white corpuscles; only about 40 pages are devoted to the technique of the estimation of the haemoglobin, of the enumeration of the blood cells, and of the estimation of the various proportions of white cells, using more especially the combined May-Giemsa method of staining as modified by himself. The reader must not expect to find a clinical study of blood diseases or an analysis of the changes met with in the blood in various diseases; what he will find is the author's views on the reaction of the blood as revealed by the three forms of investigation above mentioned. While admitting that his views are not those usually accepted, he expresses the hope that his volume will enable the reader to grasp the various theoretical considerations which fill so many pages. Readers who have been impressed with Dr. Pappenheim's numerous excursions into the field of haematological investigation, especially in regard to the genesis and interrelation of the various white cells of the blood to one another, will heartily welcome the volume, for although Dr. Pappenheim's views have been frequently expressed in current literature there has always been very considerable difficulty in accepting the fine distinctions he draws between different cells. If for no other reason than that Dr. Pappenheim has published eight superbly produced plates in this work, and by outline drawings analysed the various individual cells, using his special nomenclature, we should welcome this work. The plates give the reader the opportunity to pin Dr. Pappenheim down to the duty of exhibiting to the eye the fine distinctions drawn in the letterpress. Despite Dr. Pappenheim's elaborate treatise, despite the many repetitions of his conceptions, we must admit that much of his work fails to carry conviction. For a proof of this criticism we would refer the reader to Plate 8, and ask him, after a perusal of the text, to attempt to make an analysis of the cells depicted. Evidently Dr. Pappenheim has had sufficient level-headedness left to induce him to acknowledge the bewilderment caused by his classifications; for he says with regard to this plate that many of the fine distinctions are lost owing to the difficulties of printing in three colours (!). To end this review on such a note would be unjust. So far from being so deeply immersed in his subject as to have lost proportion, as some of our remarks may have led the reader to suppose, Dr. Pappenheim in this volume keeps before the reader the truth that over-refining in the study of the blood pictures in disease has done harm in the past. We must unlearn much that has been taught, and it appears that the belief in the importance of distinction between leucocytosis and leucocythaemia which has led us to look upon one as a reaction to infection, and the other to a pathological result of some non-infectious nature, must be revised. The true conception of the meaning of Hodgkin's disease, of the leucocythaemias, of pernicious anaemia, of splenic anaemia, of inflammatory leucocytosis, will probably be one which recognizes in all a reaction to a stimulus or stimuli acting on the blood primarily, or on the blood forming organs primarily or on both at the same time. Very different stimuli may produce very similar results—for example, in bothriocephalus anaemia, and in pernicious anaemia. Progress in the study of the cellular content of the blood will come by accepting this doctrine, and though in perusing this volume we are constantly annoyed by what seems to be useless repetitions, by various addenda, by footnotes without number, not only to the remarks made in the general statement of views which are so painfully elaborated, but also to the numerous shortened summaries of these views, it must be constantly kept in mind that it is to Dr. Pappenheim's views, or mainly to them, that we must look in the future for the unravelling of countless problems. If the volume had been more carefully revised for publication it would have appealed to a larger circle of readers.

[1] *Grundriss der hämatologischen Diagnostik und praktischen Blutuntersuchung. Ein Leitfaden für Anfänger Studierende and Praktische Aerzte.* By A. Pappenheim. Leipzig: Werner Klinkhardt. 1911. (Roy. 8vo, pp. 272: Tfn. 8. M. 12.)

The volume[2] by Dr. DOMARUS differs very much from Dr. Pappenheim's work, and, if we are not mistaken, will be far more welcome to the student and practitioner. Its scope is not too ambitious. The first 63 pages deal with the technicalities of blood examination, and contain just as much information on the debatable points connected with the morphology and origin of the blood cells as will give the reader an incentive to look elsewhere if he wants to know more. It is interesting to see that in such a comparatively small work as this is, space should be found for reference to the work of Arneth, which was reviewed in this JOURNAL some years ago. His investigations led him to the conclusion that the slighter the polymorphous changes in the nuclei of the neutrophile leucocyte the younger such cells were, and vice versa. If many of the younger type of cells figured in the blood field then, it must mean that the older types have undergone destruction but that the supply from the blood-forming organs was prompt and adequate. The remaining 130 odd pages of the book are taken up with an account of the clinical aspects of true blood diseases and with the details of the blood examination in many of the diseases which have but remote connexion with primary disorders of this tissue. The reader will be very interested to read how Dr. Domarus distinguishes lymphatic leucocythaemia from pseudo-leukaemia and the latter from Hodgkin's disease (which he calls a malignant granulomatous disease) and from lymphosarcoma. The plate showing the staining character of the leucocytes with the May-Grünwald medium is a triumph of lithography, but it avoids difficulties too much. Dr. Pappenheim's atlas, in spite of its multiplication of types, would be a better guide for serious scientific work.

[2] *Taschenbuch der klinischen Hämatologie.* By Dr. von Domarus, assistent an der II Medizinischen Klinik in Munchen. With a contribution by Professor Dr. H. Rieder on the Roentgen-ray treatment of diseases of the blood and blood-forming organs. Leipzig: Georg Thieme. 1912. (Post 8vo, pp. 210, one coloured plate. M.4.)

It is interesting to turn from these two German works to the compact little volume written by Dr. LEFAS.[3] He devotes as many pages as Dr. Domarus to the technical examination of the blood, but contrives to pack into these limits references not only to those methods which he has found most serviceable, but to those which have been adopted by many workers in different countries. Two or three pages are devoted to the examination of the marrow, a subject which, though at present not developed clinically, might well be of use in the diagnosis of obscure causes of death. It has been found difficult to fix a definite formula for the various cells found in the human marrow, but Sacconaghi has been able to establish one in the rabbit, and details of it are here given. Those working at comparative hematology will find at p. 94 useful facts connected with the blood formula of various other animals. It is evident from the section on leucocythaemia (p. 161) that French workers, like the German authorities mentioned above, accept the idea that at the bedside it is possible to meet with conditions, not examples of lymphadenoma or Hodgkin's disease, which, as they reveal external characters so like those of leucocythaemia, and yet do not reveal the blood changes met with in such states, may well be called "pseudo-leucocythaemia." Lefas apparently agrees with the view enunciated by

[3] *Hématologie et cytologie cliniques.* By Dr. E. Lefas. With a preface by P.-E. Launois, professeur-agrégé à la Faculté de Médecine. Second edition, entirely revised. Paris: J.-B. Baillière et Fils. 1912. (Pott 8vo, p. 296: 5 coloured plates. Fr. 4.)

Pappenheim that the maladies known as the leucocythaemias really belong to the group of infectious diseases, as opposed to the conception advocated by Banti and others that the leucocythaemias are really of the nature of sarcomatous disease. The last forty odd pages are devoted to the study of the cells in various fluids; the section dealing with the study of the cerebro-spinal fluid are very fully developed. We close this useful little monograph with feelings of regret that the illustrations, both coloured and uncoloured, fall so far behind the excellencies of the subject matter.

A TEXTBOOK OF SURGERY.

The reputation of Thomson and Miles's *Manual of Surgery*, already thoroughly established, will be enhanced by the excellence of the new edition.[4] For authors of a textbook the task of keeping the work strictly up to date is becoming more formidable every year. We are told that a battleship becomes, if not quite obsolete, at any rate, in some respects out of date almost as soon as she is commissioned. In very much the same way we can understand that an author may find his work become in some more or less important degree behind the times in the interval between the laying down of the keel, so to speak, of the new issue and the appearance in the waters of the medical world of the fully commissioned book. The publication of a new edition of such a book as this is not, we fancy, undertaken by its authors with a light heart. And it is with special pleasure that we note that this, the fourth edition, maintains the freshness of treatment of the subject and graceful style of its predecessors.

The first volume deals with general surgery almost exclusively; some chapters, however, are devoted to injuries and diseases of the joints and bones in detail. A very large amount of new material has been added, and yet the work has been kept within limits of size not beyond the range of the student and the practitioner.

It is manifestly impossible for us to notice all the new features of the work. In the chapter on syphilis the remarks on the Wassermann reaction are short, but sufficient to rouse the interest of any one disposed to make further inquiry. Salvarsan is mentioned with more reserve than writers on "the revolution in the treatment of syphilis" may care for. Much has been learnt about it since the edition went to press. For example, in the text we read that the services of a "skilled chemist" are required to prepare the yellow powder for intravenous injection. The recent modifications in the methods of preparation suggested by Ehrlich do not demand any very great chemical skill. That very reserve keeps the authors right, for now that the limitations of salvarsan are known we find their opinion that it may be best for the drug to be combined with a course of mercury to be in accordance with the opinion of many observers, not excepting Ehrlich himself.

In looking into the author's descriptions of the treatment of aneurysm, we are disposed to take exception to the statement of the *rationale* of the acupuncture method of Macewen. We find that "granulations form on the rough surface produced, and on these the blood coagulates, the clot thus formed increasing in size till it fills the sac." Now Macewen holds that scarification induces reparative exudation in the parietes, infiltration of these with leucocytes follows, and then there is a further separation of leucocytes from the blood current and layers of white thrombus form along the wall of the aneurysm.

The chapter on methods of wound treatment deals very fully with the subject; more might have been made of the discussion on antiseptics, in this respect, that too many substances are mentioned and too little information is given of most of them. A statement as to their relative germicidal power is now practicable, and it is a matter which students should have firmly impressed upon them. The authors could well have omitted reference to many of the newer proprietary disinfectants especially those containing soap regarded by some observers as worse than useless.

In the treatment of fractures the authors hold temperate views and are opposed to wholesale operative measures applied in some schools in simple fractures, say, of the leg bones, though they strongly advocate open operation after eight to ten days when extension and manipulation will not bring the fragments into accurate apposition.

The second volume deals with regional surgery. It also has been most painstakingly revised and judiciously enlarged. The arrangement of the regions is anatomical, beginning with the head, face, neck, and so on, working downwards. The result is that it is easy to get at once to the part of the subject one desires to study. There is much subdivision, and the chapters are, on the whole, short. A feature of each is a brief dissertation on the anatomy, and sometimes the physiology, of the region whose diseases and injuries are described. These prefaces are of great value, as they are plainly and concisely written with a practical purpose in view. An illuminating diagram generally accompanies the letterpress. The text is written in crisp, lucid English, so that reading is pleasant, and yet the points are put in such a way that they stick. The aspect of this volume which appeals most to us is the great emphasis placed on the clinical features of disease; they are described uniformly and without overloading by description of conditions rarely encountered.

In the third volume, added to the new edition, the authors have presented to the profession a really readable work on operative surgery. It is compact, concise, and yet quite sufficiently full for the purposes of the student and practitioner. Its chief outstanding merit is that it embodies the experience and ideas of the authors, who write of operative procedures as they have tested them, and not simply as they have read about them. The pictures are uniformly excellent, and the descriptions are written in a quiet, self-possessed style. The authors leave much to the initiative and intelligence and powers of practical application of the operator. Examples of these points of merit are notable in the chapter dealing with operative surgery of bones; in that on hernia, where believers in the saccular theory of hernia will find the treatment of the sac elevated to its true place of importance; and in that on intestinal surgery, where the authors, rightly we think, recommend the simplest forms of intestinal suture, and but few of these. The printing and style of the three volumes are good, and we have found only two instances of the machinations of the "printer's devil": Vol. II, p. 671, third line from foot of page, and Vol. III, p. 456, in paragraph (*a*).

These three volumes constitute a textbook of surgery of the very highest rank; the teaching is absolutely sound throughout. They are a tribute to the thoroughness and excellence of the surgery of the present-day Edinburgh school, in which the authors are such distinguished teachers.

SYNTHESIS OF DRUGS.

A typical example of German book writing industry at its best lies before us in the shape of the third edition of Professor Sigmund Fränkel's volume on the synthesis of drugs.[5] It is written for medical practitioners, chemists, and pharmaceutists, and endeavours to trace the connexion between the chemical constitution of drugs and their physiological action. Such knowledge, as the author points out, is not merely of scientific interest, but also possesses considerable value expressed in pounds, shillings, and pence. For the advances made in synthetic organic chemistry, and in the study of the fate of drugs in the body have brought to light two highly important facts. First, that there is reasonable hope of preparing a new drug of almost any given constitution on the one hand, and, secondly, on the other, that in the case of many important drugs occurring naturally in plants or elsewhere, the pharmaceutical properties of the drug are bound up with certain of the side chains or atomic groupings in its molecule, and are not attached to the whole of its molecule as such. Hence the pharmacologist can often indicate to the synthetic chemist the

[4] *Manual of Surgery.* By Alexis Thomson, F.R.C.S.Edin., Professor of Surgery, University of Edinburgh, Surgeon Edinburgh Royal Infirmary, and Alexander Miles, F.R.C.S.Edin., Surgeon Edinburgh Royal Infirmary. Fourth edition, revised and enlarged, in three volumes. Edinburgh, Glasgow, and London: Henry Frowde and Hodder and Stoughton. 1912. (Cr. 8vo. pp. 939; figs. 274. 10s. 6d. net.)

[5] *Die Arzneimittel-Synthese, auf Grundlage der Beziehungen zwischen chemischem Aufbau und Wirkung.* Für Aerzte, Chemiker, und Pharmazeuten. Von Dr. Sigmund Fränkel. Third edition, enlarged, and revised. Berlin: J. Springer. 1912. (Roy. 8vo. pp. 831. M.24 in paper, M.26.50 bound.)

approximate chemical constitution of a new drug that is to have certain medicinal properties, and can often save him fruitless labour by pointing out beforehand the lines along which the chemical constitution of some newly invented or discovered drug can be most promisingly developed or varied. Thus, it is often possible to get rid of certain undesirable qualities—insolubility, for example, or an unpleasant taste, or an unduly irritating action—in a synthetic product without impairing its most important activity as a drug; a vast amount of knowledge of this sort has been accumulated by organic chemists during the last few decades, and Professor Fränkel's volume, up to date down to October, 1911, gives a lucid and well-arranged summary of it all. The first 200 pages form the general part of the book, and deal with the theory of the action of drugs in the body, the influence of special atomic groupings in drugs, and the alterations, synthetical or analytical, that drugs undergo in their passage through the organism. The special part of the book covers 540 pages, and deals in successive chapters with such groups of drugs as the antipyretics, the alkaloids, hypnotics, antiseptics, and so on. In the ten pages given to the organic preparations of arsenic one naturally looks first for an account of the preparation of salvarsan. A scheme whereby it might be prepared from p-aminophenyl arsenious acid (the mono-sodium salt of which is atoxyl) by successive oxidation, nitration, and cautious reduction is given. One reads that Ehrlich ascribes its spirillocide action to the trivalent arsenic atom it contains, while its toxicity is reduced by the hydroxyl groups in the para position, and its pharmacological activity is increased by the presence of amino or hydroxyl groups in the ortho position to the arsenic atom. Countless references to the literature are given throughout the book, and it ends with full indices. It is fully up to date, and to the pharmacologist, to the organic chemist interested in drugs, and to the chemical physiologist it is indispensable.

TREATMENT OF NEURASTHENIA.

DR. PAUL HARTENBERG is well known as the author of many interesting works on nervous diseases, and the last volume from his pen on the treatment of neurasthenics[6] is well up to the high standard of his previous publications. It is most readable, is written with all the author's usual clearness and precision, and is a record of the practical application of his extensive experience to the treatment of one of the most widespread and troublesome affections of the nervous system with which we are called upon to deal. Among the manifestations of neurasthenia, Dr. Hartenberg calls attention to the frequency with which atonic dyspepsia is encountered as a concomitant condition, and expresses the opinion, with which many observers will agree, that dyspepsia with a moderate dilatation of the stomach, far from being a consequence of the neurasthenic state, invariably occurs as a precursor, and is to be regarded as a principal cause. Many other causes, besides dyspepsia, contribute to the occurrence of neurasthenia, but none of them is self-sufficient, and the cause, whatever it be, can only produce the neurasthenic condition when it acts upon a nervous system with a special predisposition to this form of disturbance. Every nervous system, says Dr. Hartenberg, is possessed of a limit of "fatigability," and those in whom this limit is narrow are potential neurasthenics. "Fatigability" is a quality inherent in all men, but, like every other tissue proclivity, it varies in different individuals, and is influenced by inherited tendencies as much as, if not more than, by the wear and tear of every-day life. In the treatment of the condition the important point to ascertain is the margin of resisting power possessed by the patient. When kept within that margin his nervous system will respond comfortably to the calls he makes upon it: beyond it he will become, whatever the cause of excessive demand be, neurasthenic. Dr. Hartenberg has found that the results of treatment are not always alike, and that, as is to be expected, the patient with an inherited predisposition to "fatigability" is the one from whom least is to be expected in the way of complete and lasting cure. In the management of neurasthenia he lays special stress upon the necessity for complete confidence between patient and physician. The only form of treatment by suggestion which he has found of any use is the faith inspired by the daily visit of a wise and encouraging doctor. This personal and direct treatment, he writes, naturally demands frequent, almost daily, interviews between the patient and the physician. It is necessary, in fact, that the patient should be continuously under medical influence in every stage of the treatment. In the matter of drugs he has found, contrary to the experience of many physicians, that strychnine is without parallel as a curative agent, and is to neurasthenic depression what morphine is to pain. To be effective it must be used in large and progressive doses. He prefers the hypodermic route of administration, injects it once daily, and advocates its being pushed to the point of physiological toleration. When there is much restlessness and irritability he combines the strychnine with suitable doses of codeia. Alimentation, massage, rest, baths, and exercise are all discussed with admirable discrimination and with reiterated reminders that every case must be handled on its merits. Finally, on the question of prevention, he gives this wise advice: The patient will do wisely to make an exact estimate of his strength. He must be got to understand that he should limit the amount of work he does, always stopping short of fatigue, and economizing effort in every way. His hours of repose should be long, he should go to bed early and get up late. He must be content to take a siesta after meals, after lunch in particular, so that the day may be divided into two parts by an hour of immobility and quiet. In a word, he must resign himself to doing a moderate measured amount of work, recognizing that his constitution is only capable of a minimum of activity.

The book is an excellent exposition of a rational and wise system of treatment, and may be cordially recommended to the perusal of every one engaged in the practice of medicine.

[6] *Traitement des neurasthéniques.* By Dr. Paul Hartenberg. Paris: Felix Alcan. 1912. (Crown 8vo, pp. 350. Fr. 3.50.)

THE DICTIONARY OF NATIONAL BIOGRAPHY.

THE second volume of the second supplement of the *Dictionary of National Biography*[7] was published on October 3rd. The supplement is to contain biographies of noteworthy persons who died between January 22nd, 1901, the date of Queen Victoria's death, to which the first supplement published in the autumn of 1901 brought the record of national biography, and December 31st, 1911. The new volume, like its predecessor, is printed on the thick paper of the original edition, and contains some 690 pages. The principal biographies, judged by length, are those of Sir William Harcourt, the first Viscount Goschen, George Meredith, Sir Theodore Martin, and Sir J. D. Hooker, the last by Sir W. T. Thiselton-Dyer. The volume contains about the usual proportion of names of distinguished members of the medical profession. Among those are Sir Michael Foster, by Professor J. N. Langley; Dr. Hughlings Jackson, by Dr. James Taylor; Dr. Gee, by Dr. Norman Moore; Sir W. T. Gairdner, by Dr. Gibson of Edinburgh; Sir A. V. Macan, by Dr. Rowlette of Dublin; Dr. Allan Macfadyen and Sir Stephen Mackenzie, by Dr. Rolleston; and Sir Arthur Mitchell, Scottish Commissioner in Lunacy, by Mr. A. H. Millar. For most of the biographies of surgeons, including Sir William MacCormac, Mr. Christopher Heath, and Mr. Timothy Holmes, Mr. D'Arcy Power is responsible. The biography of Sir Joseph Fayrer is contributed by Dr. H. P. Cholmeley, and that of Sir William Hingston by Dr. Andrew Macphail of Montreal. The biography of Sir Seymour Haden is by Mr. A. M. Hind, and is chiefly concerned with his influence in the recent revival of etching in this country. A very excellent account of the life and work of Sir Francis Galton is contributed by Sir George H. Darwin. The biography of Lecky, the historian, is by Dr. F. W. Prothero. The Supplement, under the editorship of Sir Sidney Lee, continues the admirable tradition established by him and Sir Leslie Stephen in the original work, and judging by the medical and scientific biographies seems to include the vast majority, at least, of those names which ought to find a place in such a compilation.

[7] *Dictionary of National Biography.* Second Supplement. Vol. II. Faed-Muybridge. London: Smith, Elder, and Co. 1912. (Roy. 8vo, pp. 696. 15s. net. Half mor., 20s. net.)

NOTES ON BOOKS.

THE Rotunda Reports[8] of the year present several features of special interest. Three illustrations are given of the new lying-in wards, and 2,241 cases were dealt with in the extern department, 2,608 in the maternity, and 604 in the gynaecological wards. In obstetrical practice the most important change has been the adoption of the system of early rising, the patients being encouraged to sit up in bed twelve hours after delivery and to get up after forty-eight hours. The result seems to have been entirely favourable. Individual cases of torn perineum and others are, of course, excepted from the general rule. Experiment is also being made in departure from the routine eye-douching with silver nitrate. Thirty cases of vaccine treatment of puerperal infection are recorded with three deaths. The difficulty of political origin which lies before maternity schools from the conditions of the maternity benefit of the Insurance Act are referred to, and suggestions made regarding them. Of great pathological interest are two cases of intraperitoneal haemorrhage found on Caesarean section, and there is also a case of chorion-epithelioma, the first that has been recorded in Dublin for twelve years.

Dr. FRENCH'S small volume in its third edition[9] maintains the purpose for which it was originally intended—namely, that of being a convenient guide to those examinations which are not carried out at the bedside, including the examination of the urine, blood, sputum, pus, gastric contents, faeces, various exudations and fluids the physiological characters of which have been altered by disease, and finally tests for the commoner poisons. It is not clear from statements made on pages 5 and 9 whether uric acid crystals are pigmented by uroerythrin or by urochrome. A word of warning, too, would be in place on page 39 et seq. in the description of the tests for acetone and diacetic acic that the urine should be recent. The volume contains a very large amount of useful information within very convenient compass.

In a little book with the title *The Care of Infants and Young Children*[10] Dr. A. DINGWALL FORDYCE has gathered together his lectures delivered to the medical class of the Christian Workers' Training Institute. The book is well written, in an easy and simple style, and shows clearly the author's power of explaining the elementary matters of which he writes. The articles on the characteristics of healthy childhood, on infantile mortality, and on hygiene, are full of sound common sense and omit nothing of importance. In the last chapter the author rightly lays emphasis upon the futility of hospital out-patient treatment unless supported and amplified by the work of the health visitor and the education of the parents of the child. It is, however, of equal importance to remember that a superficial acquaintance with matters of purely medical interest may be a dangerous possession both for mothers and for health visitors. For this reason the wisdom of the author in extending his lectures to include descriptions of many infantile disorders may be doubted, as also the insertion of some twenty photographs illustrating pronounced pathological conditions. In his preface the author states that the lectures may prove a useful guide for mothers, nurses, health visitors, and students of medicine. It would perhaps have been better to exclude consideration of the last class. It is difficult to imagine that lectures delivered under such circumstances should prove of great use to students of medicine.

Mr. ROGERS, who has had a large experience in social work, is convinced that "the heart of the matter lies in character."[11] He emphasizes his belief in the effectiveness of voluntary service that is called "charity," as opposed to State-enforced relief, which, even where necessary, pauperizes the recipient and is extorted grudgingly and of necessity. The book is a collection of scattered papers, but its keynote is the need for the organization of charity. The book is, in fact, largely a defence of the methods of the Charity Organization Society and a plea for the education of character by religion. The cure of poverty, Mr. Rogers holds, lies in charity. He admits that charity has to a certain extent failed, but he maintains that in dealing with the mass of misery around us it is successful in comparison with the untried theories of its critics. The reason for the failure is that charity has been disorganized. Summing up his teaching, he believes that the solution of social problems lies in large part in education, as it is in schools that character is to a great extent formed. But Mr. Rogers will have nothing to do with secular or undenominational education. Whether one agrees with him or not, his book is well worth reading, for it is the outcome of knowledge gained at first hand, and is marked throughout by strong common sense as well as by a fine humanity not blinded by sentimental illusions.

[8] *Clinical and Pathological Reports of the Rotunda Hospital for One Year.* By Henry Jellett, M.D., etc., Master; Bethel A. H. Solomons and David H. Madill, Assistant Masters; and Robert J. Rowlette, Pathologist. Dublin. 1912. (Pp. 64.)

[9] *Medical Laboratory Methods and Tests.* By Herbert French, M.A., M.D.Oxon., F.R.C.P.Lond., Assistant Physician, Guy's Hospital. Third Edition. London: Baillière, Tindall, and Cox. 1912. (Crown 8vo, pp. 212; figs. 88, coloured plates 2. 5s.)

[10] *The Care of Infants and Young Children.* By A. Dingwall Fordyce, M.D., F.R.C.P.Ed. Edinburgh: E. and S. Livingstone. 1911. (Cr. 8vo, pp. 161; illustrations 36. 1s.6d. net; cloth covers, 2s. net.)

[11] *Circumstances or Character?* Studies in Social Work. By Clement F. Rogers, M.A., Lecturer in Pastoral Theology, King's College, University of London. London: Methuen and Co., Ltd. 1911. (Post 8vo, pp. 226. 3s. 6d. net.)

MEDICAL AND DIETETIC PREPARATIONS.

Muthol.

MR. R. DEMUTH (68, Salusbury Road, London, N.W.) has submitted a sample of a preparation of pure petroleum oil called "muthol." It is a slightly gelatinous material, very similar to milk junket in appearance and consistence, very sweet and slightly lemon-flavoured, but practically free from other taste. It is stated to contain 99 per cent. of petroleum oil, but presumably this is intended to indicate the percentage in the dry substance. Our analysis of the sample submitted showed over 10 per cent. of moisture, and 88 per cent. of mineral oil corresponding to paraffinum liquidum, *B.P.* Muthol is put forward for use in chronic constipation, colitis, etc., its action being chiefly that of a lubricant in the lower bowel. Considerable doses of liquid paraffin can be taken in this form with ease, and it is not likely that any one would find this preparation other than agreeable.

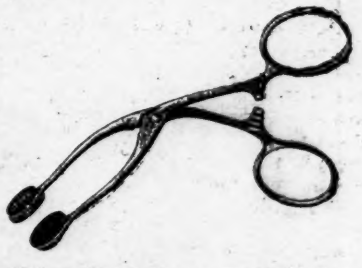
Ridge's Desiccated Milk.

We have received from Ridge's Food Co. (Boleyn Road, London, N.) samples of the milk powder which they have recently put on the market as a food for young infants in cases where hand feeding is necessary, as well as for general use in place of fresh milk. This preparation, which is named Ridge's Desiccated Milk, is in the form of a fine powder. Our analysis showed it to contain 23.0 per cent. of protein and 23.1 per cent. of fat. It can be readily mixed with cold or hot water, producing a fluid practically indistinguishable in taste from fresh milk. It is stated that the milk from which the powder is prepared is first thoroughly pasteurized. The samples submitted showed it to be a satisfactory preparation,

MEDICAL AND SURGICAL APPLIANCES.

Tongue Forceps.

Dr. T. C. REEVES (Alfriston) writes: The diagram illustrates a type of tongue forceps, made to my instructions by Messrs. Mayer and Meltzer. The chief advantage claimed is the insertion of rubber discs to hold the tongue, in place of the ordinary steel jaws. They grip firmly and cause no injury. The entire instrument can be sterilized by boiling or other means with the greatest ease. The rubber ends can be renewed whenever required in a few seconds. The handles are placed at an angle for the convenience of the anaesthetist, and can in no way interfere with the operator. Patients are apt to complain of a sore tongue after the ordinary type of forceps has been used. It will be found that the finger-grip tongue forceps obviates this.



THE German Society of Scientists and Medical Practitioners has decided to have its proceedings regularly recorded in volumes of archives. In addition to the papers and discussions, the *Archives* will contain biographical and other articles. The editor is Geheimrat Dr. Sudhoff, to whom communications on the subject should be addressed at Thalstrasse, 33, II, Leipzig.

Introductory Address

ON

UNIVERSITIES AND MEDICAL EDUCATION.

DELIVERED AT THE OPENING OF THE MEDICAL SESSION OF THE VICTORIA UNIVERSITY OF MANCHESTER ON OCTOBER 1st, 1912,

BY

H. D. ROLLESTON, M.D.CANTAB., F.R.C.P.LOND.,

SENIOR PHYSICIAN, ST. GEORGE'S HOSPITAL; EXTERNAL EXAMINER IN MEDICINE IN THE VICTORIA UNIVERSITY OF MANCHESTER.

(*Abstract.*)

IN the past it has often been felt that universities should not give a technical training, or that they should at most be concerned with principles and not with their practical application. In other words, that a university should continue and expand the work of the schools into a liberal education rather than provide a strictly professional instruction, however good. This was partly due to the proper ambition to send out graduates with a broad outlook and humanization of character, and partly to a persistence of the vested interests of the classical tradition with which English universities in the past were almost exclusively concerned. But the view that universities should not give technical education, though they might examine for and confer medical degrees, may, in the light of the special courses and diplomas set forth in their calendars, be safely regarded as a thing of the past. The advantage of "the grand old fortifying classical education" is such a familiar *motif* in addresses given on occasions such as this that it may appear philistine to suggest that the Humanities are not absolutely essential to a medical man. The school and university routine of Latin and Greek is a hardy survival from the time when Latin at least was of distinct use as a means of communication between men who had no other common language, and was the medium of correspondence of statesmen and philosophers. This no longer holds good to the same extent as it did two centuries ago, and though French and English have to some degree taken its place, the want of a universal language is shown by the construction of artificial substitutes such as Volapuk, Esperanto, Ido, Neutral, and by the movement for the adoption of a simplified form of Latin as an international language under the name of "Latino." It may safely be concluded that to the ordinary medical man the direct or marketable advantage of a classical training is entirely out of proportion to the amount of time commonly devoted to it. But it is often urged that, apart from any intrinsic use, the classical languages, in virtue of their peculiar structure, give a mental training and discipline which connot be obtained from the study of French and German. This statement is difficult to prove. Further, good classical training often entails neglect of modern languages. This is a most important consideration, for there can be no question that in medical science a knowledge of French and German is of incomparably more use than the highest classical attainments. The dead languages should be taught earlier and better, but they should not be abandoned, and the time spent on them should be rearranged and curtailed. The education best suited for a medical student before beginning his professional subjects should be on the following lines. The subjects ordinarily taught in schools, including Latin and Greek, should be pursued until the age of about 15½ years, when the student's proficiency should be tested by an examination the results of which should count at the university matriculation. After passing this examination, the student should spend the next two to two and a half years in obtaining a sound knowledge of French and German, literature, English composition, physics and chemistry, and the necessary mathematics. At the end of this time, when he is from 17½ to 18 years of age, he shoud be able to pass an examination in these subjects, and then begin the study of biology and of anatomy and physiology. This compromise would ensure general culture with a modicum of classical training, and a knowledge of French and German, at a time when it can be readily acquired, and yet would not encroach unduly on the time necessary for strictly professional instruction.

No doubt the ideal standard is that every student of medicine at his entrance to the profession should be a graduate in arts, with a sufficient knowledge of physics, chemistry, and biology, and of French and German; but these requirements demand more time than can or should be afforded by the average student, and it is for the average student that arrangements and regulations must be adapted. Those who advocate that the preliminary subjects should be taught in the schools usually include biology with chemistry and physics, and this plan is obviously advantageous from the point of view of saving time. But the specialized biology necessary for medicine requires the services of a medically-minded teacher in a greater degree than do chemistry and physics, and would therefore appear to be more conveniently carried out in university laboratories than in schools.

In view of the extensive demands on the medical student it has been suggested that the time spent on anatomy and physiology should be curtailed by altering the teaching so as to insist on those details only which are of obvious practical use in medicine and surgery. Thus medical and surgical or applied anatomy, and not the science of anatomy, would be taught, and the minute details of bone markings, the relations of muscles, and other points in descriptive anatomy which have no direct utilitarian bearing would be omitted. Physiology would be pruned to some extent—for example, by the elimination of exercises in muscle-nerve preparations. On the other hand, more attention would be paid to visceral topography and to the minute study of fresh organs.

Apart from their direct practical application, these sciences have a great educational value. Practical anatomy educates the powers of accurate observation and of classification, trains the memory, develops the inductive processes of reasoning, and confers manual dexterity and quickness of eye. In English universities the professorships of medicine and surgery differ from those of other faculties. Their incumbents, unless possessed of ample means, are mainly dependent for their living on sources outside the university, and therefore engage in private practice, which must often form the chief interest of their life; whereas the professors of other faculties receive a living wage on the tacit understanding that their activities shall be entirely devoted to their chairs.

The duties and responsibilities of a clinical professor include (1) the care of the sick in the hospital; (2) clinical instruction in the wards, clinical and, perhaps, systematic lectures; (3) official duties in the university and medical school; (4) the cares and anxieties of a consulting practice rendered necessary to earn a living and to provide for his family and old age; (5) reading and investigation of new methods so as to keep abreast of modern knowledge; and (6) original research in order to advance the science of medicine. The claims of the first four of these spheres of activity leave little time for anything else, and especially render research almost impossible. It therefore follows that one of the functions of a university—namely, original research for the advancement of scientific medicine—is practically prevented by the conditions under which the professors hold office.

From the university standpoint clinical medicine may be divided into (*a*) the teaching of the applied science, and (*b*) the pursuit of the pure science. As far as the object of the Medical Faculty is to turn out sound practitioners of medicine, the present arrangement has worked admirably. But to place medicine on an equal footing with other sciences as regards facilities for research, some change is necessary, and on the question how this is to be effected there is considerable difference of opinion. Possible alterations are the following: (1) That the professors of medicine, surgery, and obstetrics and gynaecology, whose conditions of tenure would be unchanged, should each have several assistants of proved ability. These assistants should be paid a living wage, and in return should for some (five to ten) years devote the whole of their time to their chief's clinic. They should take an active part in the teaching as the professors should direct, and at the same time should specialize in some department—for example, to take medicine, in pathological chemistry and metabolism, haematology, neurology, or infectious diseases—in which they should pursue original

investigation. This would make clinical medicine more actively productive, and would provide a class of scientific clinicians from which professors of medicine could in the future be selected. Such assistants would be of the rank of, or actually be, registrars or junior assistant physicians and assistant surgeons, but would, while holding this post, be debarred from private practice. (2) A second possible change—namely, the establishment of the whole-time professors of clinical practice, though in principle only an expansion of the first—has not unnaturally aroused much criticism and some opposition, for it would radically change the status and prospects of the professors of clinical practice. Personally I am convinced that this reform will eventually be effected with advantage both to medicine as a whole and to medical education. The ideal of the whole-time professors of medicine and surgery who, like the professors of pathology, expend all their energies in teaching and working at their branches of medical science, and are continually in touch with the wards which form their laboratories, has often been carried into effect, especially in Germany, in spirit, though not in the rigid letter as to total restriction from private practice. The whole-time professor should be appointed when comparatively young (30 to 40) so that he has a prospect of at least twenty years' active work. He would be provided with a staff of competent assistants of the same calibre as those mentioned above, and must be paid an adequate salary and given a retiring pension graduated on the duration of service. The professor would be responsible for the organization of his department, would teach, pursue, and inspire original research, and set a high scientific standard. The advantages of the whole-time system—namely, undisturbed contact with the hospital patients and students, opportunities for uninterrupted research, for keeping up with the literature, for organizing a school of research workers, and the improvement in the teaching, both ordinary and advanced—which would thus result are sufficiently obvious. Much has been said on the other side; it has been stated, among others by Sir William Osler, that it would be impossible to keep the public away from a man so conspicuously and favourably placed; and that if this isolation could be preserved the professor would suffer from his narrowed outlook on medicine, or, as it has been expressed, that he would be a professor "of hospital practice" rather than of "clinical medicine," and that he would come to regard patients somewhat in the same light as guinea-pigs and from the laboratory rather than from the broad humanitarian point of view. (3) To debar the professors from private practice entirely is as yet without precedent in this country, and would necessitate very considerable financial endowment. A less radical change should be half or three-quarter time, and that one day and some afternoons in the week should be free for practice; or that paying wards attached to the hospital should be at the professor's disposal, so as to minimize the waste of time involved in ordinary consulting practice. This would to some extent meet the financial difficulties and the objection that a whole-time appointment would cramp the professor. The drawback to any kind of part-time appointment is the difficulty in restricting the amount of private work, for though it might work well at first, the demands on such an incumbent's services must almost necessarily increase with time, and eventually encroach seriously on the professorial duties. (4) It is more satisfactory to combine research and the teaching and training of university students by whole-time professors and their skilled assistants than to make special arrangements for original work alone, because the scientific spirit is thus more widely diffused. Instead of the establishment of whole-time professors in conditions favourable alike for research and scientific instruction, endowment has already been provided for scholarships, and in a few instances for research hospitals. It has been urged at intervals since 1869 that there should be a one portal qualifying examination, corresponding to the State examination of other countries, so as to protect the public by ensuring a uniform standard of professional efficiency. As a result of the establishment of a one-portal system university degrees would become honorary instead of qualifying, and, incidentally, examining bodies which now grant ordinary diplomas to practise would die of inanition. For the university degree some further requirements in the way of an examination (not a repetition of that carried out by the State board) would be necessary.

In order to make the medical degrees of universities mean more than superior qualifications, alterations in, or rather additions to, the curriculum, such as one of the following, might be made: (1) Six or twelve months' residence as a medical officer in a hospital might be demanded before the degree is conferred. In existing circumstances this would entail a qualification to practise from some licensing body, and would therefore add to the trials of the already over-burdened student. (2) Instead of the M.B. degree being the natural outcome of passing the necessary examinations, a thesis might be demanded so as to show how far the mind has been trained rather than crammed, and to bring out evidence of the ability to think and report logically and intelligently on what has been observed. (3) The students might pass for a period of twelve months or so into the hands of the whole-time professors of medicine, surgery, and obstetrics and gynaecology. There are, however, difficulties in the way of adopting a one-portal system of qualification. In the first place, the universities would have to give up their right to qualify their graduates to practise, an act of self-sacrifice which might not appear to them to be fully counterbalanced by the advantages secured. The examination, in order to be uniform, must be conducted by one board of examiners, which would be made up of representatives of the various teaching universities in England, just as now holds good to a certain extent in the constitution of the Conjoint Examining Board in England. It is doubtful if the provincial universities would consent to the examination being conducted exclusively in London, on account of the inconvenience both to their students and their representatives on the examining board. The written examination could be held in various centres, but if the clinical part were also decentralized it would be difficult to utilize the same examining board as in London, and if any extensive change in the *personnel* of the board occurred, the result might not be materially different from that at the present time.

Introductory Address

ON

THE PRESENT DUTY OF THE MEDICAL CITIZEN.

DELIVERED ON THE OCCASION OF THE OPENING OF THE WINTER SESSION AT ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.

BY

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(*Abstract.*)

[IN the course of an address to students of St. George's Hospital on October 1st, Mr. Grimsdale made the following observations:]

It is reported that the great Abernethy on some occasion similar to the present greeted the newcomers as follows: "Good God, gentlemen, what is to become of you all?" His exclamation showed that even one hundred years ago the medical profession, in the opinion of one of its leaders, was over-full and not over-paid.

But if Abernethy were here now he would probably repeat his warning in even stronger terms. For in the present conditions, though he must admire your courage, he would doubt the worldly wisdom—I had almost said the sanity—of any man choosing the profession of medicine.

Abernethy was playing the part of a cynic; and it may seem to you that there is ample justification for cynicism now, when the horizon of our outlook is hidden by clouds, and when it seems that medicine—never a lavish paymistress—may be unable to pay her followers what the phrase of the day calls a living wage.

You, the newcomers, are entering the profession at a moment when it is engaged in a struggle for life. The course of study is more difficult and prolonged, the methods of examination necessary to successful diagnosis and treatment are more laborious and costly, and the competition keener than ever before. Modern methods have advanced so far that it is not possible for the general practitioner—however energetic, however capable—to carry out for himself all the investigations needful for diagnosis in certain cases; and medicine is, at last, we hope, becoming a science as well as an art.

At this moment of critical development a blow has been aimed against advancing medicine, which, if it strikes, may well throw back our profession into the dark ages of the early part of the last century; and the injury comes from the one authority which in a civilized State might be expected to understand the importance of modern medicine to the community—namely, the Government.

It has been a strange spectacle which has been presented to the world during the months that have passed since the passage of the Insurance Act—a spectacle without parallel in the history of medicine. The profession must have been sorely tried before it rose almost unanimously in protest against such an Act.

It is not our own interest mainly that is impelling us to this unprecedented course; if it were, I am proud to think that few medical men would have supported it; but we know that not only we, but through us the whole future of medicine and our present patients will suffer.

First let me say that there is not, and will not be, so far as any one can tell, a strike of medical men. We are told almost daily by one section of the press that we are employing the worst methods of trades unions; that we have adopted all the vices of syndicalism, and none of the virtues, if it has any; that we have forfeited the right to the name of a generous profession.

We are certainly not on strike; for what is a strike? When the coal-miners struck, coal went up to such prices that the poor were unable to buy it at all, and the rich were forced to economize; when the taxi-drivers came out, taxis could hardly be procured; but there is no evidence that any medical man has refused to treat any sick person.

What is it, then, that has united the profession as it has never been united before? Why are all medical men throughout the country breaking away from all their natural instincts, unwilling to take service under the Act?

[The speaker then gave a history of the origin of club practice, of its progress up to the present, and an account of the evils created by it. He then continued as follows:]

At the time when the Insurance Bill was first heard of, it was recognized by all that some system of State insurance against sickness was most desirable. Medical men were all in favour of the idea. A workable scheme, providing a service throughout the country had indeed been suggested by some of them and had been tried in certain localities; medical men, therefore, taking into consideration that they would have to be the chief workers under the Act, and that they had already some little experience in the treatment of the people who would come under it, remembering also that they had protested on every opportunity against the system of contract practice, not unreasonably expected that they would be asked through their organizations to advise on the best methods of working. However, as I shall tell you, they were not consulted; they might have thought, since they were going to bear all the risk, that the State would deal not only fairly but generously with them.

They were doomed to disappointment. The action of the Government is barely credible and not at all creditable.

The bill was brought in in May, 1911; in spite of repeated requests the Chancellor of the Exchequer saw the representatives of the British Medical Association for the first time in April. This was the only deputation from the Association received before the introduction of the bill, and at this meeting no special opportunity was afforded to the Association for ascertaining the provisions of the bill.

Nor, apparently, was the General Medical Council, nor the Royal Colleges of Physicians and Surgeons, treated with more courtesy. Presumably, the Chancellor had medical advisers; who they were has not, I think, been made known, but they certainly were not the associations of medical men who would have commanded the respect and been in some sense at least the representatives of medicine.

When the medical provisions were known, it was at once seen that they were most unfavourable to the best interests of medicine. In the first place, the payment was to be per caput; this alone must stamp any scheme as liable to failure. It is not in the interest of any man's work that he should be paid at a higher rate the less work he does. It cannot induce to keenness and initiative if the keen man is penalized because of his keenness.

The more care taken in diagnosis and investigation the less the reward. It must not be forgotten that investigation on modern lines costs money, and this had to come out of the funds for payment of medical men.

The Chancellor of the Exchequer has throughout shown himself ignorant of the first requirements of modern medicine. It is, if one may judge from his attitude, his opinion that doctors are engaged in a guessing competition, with numbered bottles which agree with the number of the disease from which the patient suffers.

The difficulties of diagnosis, the prolonged examinations which are required to disentangle the symptoms, the intricate reactions—all these are nothing to him. His attitude is like the fabled sea captain, at sea with a sick seaman: looking up his handbook, he found that for the relief of the symptoms a dose should be given from a certain bottle numbered 15 in the ship's medicine chest. He turned to the chest and found the bottle empty. "What did you do?" said a friend. "Well, first I gave him half a dose of 30, and as that did no good I tried three doses of 5, and he died." It is good as arithmetic, but it is not scientific medicine.

Then the medical men who form the panel are entirely under the power of the local Health Committee, which, though not the approved societies, will be made up chiefly of members of these societies; it has been repeatedly shown that lay control is not in the best interests of medicine.

Lastly, the suggested remuneration is inadequate; of course, it is perfectly true that nowhere is it laid down in the Act what the rate of remuneration is to be; but it is acknowledged that only a certain rate is justified by the actuaries. The Chancellor has been very generous—at our expense—to the working man in an approved society. Under the present Act the labouring man pays about 3d. a week for his medical attention. He is often willing to pay 7s. 6d. a year for the fun of keeping a dog; it is not too much to expect that he should pay as much for keeping his health.

And, again, let me mention the case of firms who own large numbers of horses; they usually pay the veterinary surgeon a contract fee to look after them, and this is usually 21s. a head. Now, a horse cannot malinger and cannot demand unnecessary medical attention. Or we may look at this matter another way. The Government has been hitherto willing to pay 8s. 6d. a year for the medical attention of each employée in the Post Office, who are men of picked physique and in good health. It is not likely that the Government have been paying to the medical men who have had charge of these and other public servants twice the value of the services rendered. Why should we be asked now to undertake the treatment of all lives—healthy and unhealthy alike—who are compelled by the Act to insure themselves at about half the sum which the Government has previously thought equitable for healthy lives?

And with this threatened increase in the scope of contract work the value of the practice as a marketable asset has fallen, even more than Consols have done under the same master of finance.

Whatever the merits or demerits of the sale of practices, the fact that the goodwill has a market value and depends on the work of the holder of the practice must be taken into account in any scheme; now the present scheme has almost destroyed the value in many instances. To give a concrete example, an old St. George's man told me that about three years ago he contemplated selling the practice which he had built up entirely by himself; the best offer was £1,000, which for private reasons he did not accept. When the bill came in he again made inquiries, but his

practice was virtually unsaleable; he did not get any offer over £300; thus the Chancellor had caused to him a loss of capital equal to £700.

In the days when I was studying medicine at Cambridge, a small book appeared which was entitled *Fables, by George Washington Æsop*. From time to time I bought copies, but they were always borrowed by amused friends, and my last copy disappeared some time ago. The following quotation, therefore, is not literal, for, though I might have verified the words by dint of search in the library of the British Museum, I could not have improved on the sense which is contained in the following passage:

A kind-hearted She-Elephant, who was absent-mindedly wandering through the Jungle where the Spicy Breezes blow o'er Java' Isle, Heedlessly set foot on a Partridge, which she crushed to death, within a few inches of her Nest, filled by her Callow Brood. "Poor little things," said the warm-hearted Pachyderm, "My Carelessness has robbed them of their Natural Protector, but for the future my Sollicitude shall replace the Tender Ministrations they have lost." So saying she sat down on the Orphan Birds.

Very similar has been the action of the Government; the lumbering elephant, dreaming, it may be, of the rare and refreshing fruit in the distance, by its clumsy act has destroyed the value of the doctor's practice and robbed him of his freedom; and when this was pointed out, declared that it would make up all his losses by allotting the sum of 6s. per head; out of which, first the drugs and surgical appliances were to be paid for, and the balance, if there were any, was to be given for the doctor's services.

There is, however, one important respect in which the analogue does not hold good; the fabulist tells us—and he is the only person who can speak—that the she-elephant was moved to her mistaken action by sincere and well-meaning pity. But does any medical man believe in the professions of the Government, of their interest in his welfare? There may be such an one, but I have yet to meet him. In the present negotiations the Government has been extraordinarily tender to the feelings of people of all kinds; in deference to the friendly societies they have given insurance only to those who join an approved society; the leaflets by the Commissioners state that the deposit contributor, that is, the man who is compelled to enter the State scheme and cannot or will not join an approved society—is not really insured. The Government gives him no benefit beyond the amount standing to his individual account.

They have been very generous—at the expense of the medical profession—to the working man, who is probably earning more than the young doctor; they are even generous to the unqualified practitioner, because they allow any insured person to employ any quack Christian Scientist or other charlatan, and his payment is as secure under the Act as that of any qualified man.

What, then, are the present duties of the medical man? It is, of course, the duty of every citizen to obey the law, so long as it is law; is it, then, our duty to accept the present Act and work under it? If by refusal to work we fail in our duty to our patients, we shall be breaking our Hippocratic tradition, and this we, as medical men, consider to be the primary and fundamental law governing our conduct. But no patient need suffer or is likely to suffer by our refusal. We shall not deny to the suffering poor those services which have been freely given in the past, but we shall demand from those who can afford it a reward not absolutely inadequate to the value of our service.

On the other hand, if we accept the present terms, we cannot carry out our duty towards our patient; we deliberately refuse him the advantage of progressive medicine, by binding ourselves to an old—I might almost say a fossil—knowledge.

Future generations will suffer for our want of independence to-day. Surely, then, we are fully justified in our rejection of the scheme designed by the Government, and in our determination to build up a better public medical service by our own efforts.

But we must have lofty thoughts, hold lofty ideals; then we need have no fear for the future, and may know that medicine will advance in spite of all discouragement, though in our eagerness we experience small reverses, small mistakes.

That low man goes on adding one to one
His hundred's soon hit;
This high man, aiming at a million,
Misses an unit
Others mistrust and say, "But time escapes;
Live now or never."
He said: "What's time? Leave Now for dogs or apes,
Man has Forever."

OPENING CEREMONIES AT THE MEDICAL SCHOOLS.

This week the doors of practically all medical schools and faculties in London, the provinces, and Ireland have been reopened for the winter session, but not all on the same day. At many the date chosen was insufficiently early in the week for a record to appear in the present issue of any opening ceremonies which has marked the beginning thereat of another *annus medicus*. The special feature of the year, if any, has been a further move towards final extinction of the custom of selecting some one to give a formal address to the assembled students and their friends. This year there have been only one or two deliverances of that order. On the other hand, the practice of utilizing the opening day of the winter session as an occasion for a distribution of prizes in place of some more or less convenient day towards the end of the summer session seems to be growing in favour. In respect of annual gatherings of old students around the dinner table, there is no change whatever. An account of some of these meetings and other allied events here follows.

ST. BARTHOLOMEW'S HOSPITAL.

At St. Bartholomew's, one of the earliest medical schools to abandon the practice of opening the winter session with a formal address, the customary gathering of old students at dinner took place on October 1st. The dinner was held, as usual, in the Great Hall, which, however, this year presented a somewhat different appearance owing to the fact that the tables were disposed down the length of the room instead of across it. The plan has the advantage of allowing the noble proportions of this ancient hall to be better observed, but seems to have been adopted mainly in view of the increasing calls upon the space arising from the popularity of this annual gathering. This year the chairman was Dr. Lewis Jones, who has recently resigned charge of the electrical department. It is one which, as was pointed out by Sir Anthony Bowlby in proposing a toast in his honour, he practically created some twenty years ago and has conducted in such fashion as greatly to contribute to the placing of electro-therapeutics on a thoroughly sound and progressive footing. The toast to "St. Bartholomew's and its School" was proposed by Dr. Lewis Jones from the chair in a speech delivered with characteristic restraint of language. In its course he alluded to Sir Henry Butlin, whose death was a loss to surgery and to most of those present a personal loss in addition. Among changes in the staff which he mentioned was the retirement of Dr. Norman Moore from the post of Senior Physician. There could be no one present who had not enjoyed his learning and his talent for combining entertainment with instruction. He had been appointed Emeritus Lecturer on Medicine. On the surgical side Mr. Lockwood had retired from the teaching staff; in him would be missed an original—a fearless independent, whose teachings must have bitten indelibly into the memories of all who had had the advantage of listening to him. The school had to congratulate Sir Francis Champneys on becoming President of the Royal Society of Medicine, and Dr. Herringham, on his election as Vice-Chancellor of the University of London. Three colleges at Cambridge were now headed by St. Bartholomew's men—Downing by Professor Howard Marsh, Christ's College by Dr. Shipley, Gonville and Caius by Dr. Anderson. Good progress was being made in the movement towards obtaining a charter of incorporation of the school. The latter provided the same instruction as the medical faculty of a university, but in present circumstances was solely dependent on the fees of students. As a corporate body with endowments to maintain lectureships it would be

able to carry on its work much better. An allusion to the National Insurance Act was also made. The dislike which it had created among medical practitioners was probably less due to purely financial considerations than to the fact that the Act introduced the contract principle; hi- by destroying a medical man's independent positi n was certain to spoil the proper relations between a doctor and his patient, and thus lead to an amount of difficulty and friction which could hardly be estimated in advance. The question of the relation of the hospital to the Act was under the consideration of a joint committee of the hospital and school, whose recommendations would shortly be made public. The toast was acknowledged by Mr. ACTON DAVIS, who said he was present as acting treasurer of the hospital. Lord Sandhurst found he could not fulfil to his satisfaction the duties both of Lord Chamberlain to his Majesty and of treasurer to the hospital, so in order that the hospital might not lose his services entirely the governors had decided to ask the speaker to fill the office of treasurer until the time came for a change in Court officials to be made. The happy days when the hospital could rely solely upon its own resources had unfortunately passed away; it now stood greatly in need of philanthropic assistance. Like others, he had observed and admired the noble courage of the late Sir Henry Butlin in going about his work and filling high office during the last two years of his life, despite the condition of his health and his knowledge thereof. The Insurance Act was involving the hospital in much labour and considerable expense; while it was of no benefit to its employees, who had always received much more consideration from the hospital when ill than was represented by the benefits provided by the Act. The toast to the guests was proposed by Mr. BRUCE CLARKE, and acknowledged by Professor WILLIAM OSLER. The latter laid a light but very skilful hand on many thorny subjects connected with the school and medicine in general. The greatest friend England had ever had, though he did not know it, was a man named Kruger; he had touched a button which had rallied the whole of the English-speaking nations, with one exception, around England, and had created a true spirit of imperialism. Similarly, the greatest friend the medical profession had ever had was a man named Lloyd George. Like a certain angel, he had touched the pool, and thereby created ripples which had united the medical profession as it had never been united before. Never again would any one think of endeavouring to sweat the medical profession without its consent. Yet there was one rock ahead, that rock being trades unionism. If its undesirable features were not avoided the medical profession might be expected to fall into two parts. He did not think it would be possible to preserve entirely unaltered the present system of voluntary hospital enterprise. Nor did he see any real objection to hospitals being paid for a part of the work that they performed. He had himself been connected with many hospitals which had paying wards, and it seemed to him that a corresponding system might be adopted in England with much advantage to the public and hospitals, and in the long run to the medical profession itself. The toast was also acknowledged by Professor STRAUB of Amsterdam. He had once, he said, had occasion to deliver an address on his own subject—ophthalmology—in three different languages at an international congress, and had endeavoured to write each paper not only in the language but in the spirit of those who habitually used them. He found that ten pages of English represented twenty of Dutch and as many as fifty of German. It was this conciseness of the English language and of English methods of dealing with scientific subjects which accounted for much of the admiration with which English medicine was regarded abroad. Another reason was that much of the progress of medicine was due to work done in the British Isles, though this fact was subsequently obscured by work done in the same subjects abroad. Among other examples in point he quoted the history of ophthalmology, showing that the two Continental workers who commonly received the chief credit for the rise of scientific ophthalmology were men who in early life had attended at the Moorfields Eye Hospital under Bowman. In acknowledging the toast to his health, moved by Sir ANTHONY BOWLBY and loudly acclaimed, Dr. LEWIS JONES said that most of the credit which had been given him was really due to the fact that he had begun work at a time when the whole science of electricity was making rapid strides, and naturally electro-therapeutics benefited thereby. He had given in his resignation because it seemed to him that when a man had been twenty years in charge of one department it was time for him to make room for a younger man. He also voiced the general feeling that Mr. Waring, who had been the honorary secretary of the dinner for many years past, had on the present occasion almost excelled his previous efforts. On the conclusion of the toast list the party adjourned to the library, where proceedings were kept up until a late hour.

THE ROYAL FREE HOSPITAL.

THE opening proceedings at the London (Royal Free Hospital) School of Medicine for Women on Tuesday took the form of a very well attended gathering of students and their friends, who, in the course of the afternoon were provided with an account of the recent history of the school, its future prospects, and an address. Mrs. GARRETT ANDERSON, M.D., who presided, was able to give a very satisfactory account of the prospects of the school. The number of entrants for the full curriculum was thirty-two. Several valuable improvements had been made in the internal arrangements of the school, and it had been possible to establish a new scholarship, thanks to the receipt of a legacy of £2,000. The scholarship would be one of £20 a year for four years, and would be awarded as the result of a competitive examination in elementary chemistry, physiology, and biology. The formal address was delivered by Dr. JANE WALKER, who dealt with common sense. It was a faculty, she said, to which every one believed they could lay claim, though, as a matter of fact, it was a very rare possession, and one excessively difficult to define. Many enthusiasts who had been called mad in their time later on had been so filled with common sense that their detractors could not see the wood for the trees. In medical connexions the late Drs. MacCormac of Dublin and Boddington of Sutton Coldfield were cases in point. Both practised open-air treatment, the latter making his patients take a walk very early in the morning. In his view, early morning exercise was productive of the greatest good to them. This view was supported by present knowledge regarding the opsonic index in tuberculous patients; it was at its highest in the early morning, so patients by taking exercise then were able to stand a bigger dose of their own tuberculin, and thus were direct agents in their own cure. Many of the great saints of past ages had been conspicuous for common sense, St. Francis of Assisi being an example in point. Apart from his fashion of dealing with the leper question, his "Song of all created things," though fantastical, was, from the point of view of doctors, full of common sense. An example of lack of common sense in public life was the conduct of a lecturer to whom she had listened many years ago in an Egyptian school deemed quite flawless by the Minister of Education. He was carefully teaching the reading of the thermometer by the Fahrenheit scale—a method only in use in England—and instructing his class most minutely in the diagnosis and treatment of scarlet fever, a disease perfectly unknown in Egypt. At the present moment some lack of common sense was being exhibited in regard to the mentally defective problem. Surely attention ought to be more earnestly directed to the so-called normal people; steps should be taken to see that they did not tempt their feebler brothers and sisters, who, left alone, would do little harm. The special business of the medical profession was the prevention and cure of disease. But how did it proceed to carry out the first part of its duty? Clearly not in a common sense way, since it allowed people to wait until they were really ill—indeed, in many cases past recovery—before it began to deal with them. It made the patient diagnose his own condition of illness and come to medical men, instead of medical men hauling out commencing cases of illness into the arena to be forewarned, or treated if necessary. In particular the nation, if it possessed foresight and common sense, would take care that mothers received the medical help they required. Efficient mothers were the most important sort of persons in a State. The world

waxed loud and eloquent over the diminution of the birth-rate and prated volubly about race suicide and the like, quite forgetting that a nation in a high state of civilization required quality, not quantity. The lower and poorer people were, the more rapidly did they breed, so common sense demanded that the low born should be helped efficiently to climb up. Most babies were born healthy, yet one in three died before it reached the age of 5 years. Nevertheless, the world made far more fuss over one case of anthrax than over 100 babies that had died of summer diarrhœa owing to bad food and milk. In regard to the work of medical students, one heard a great deal about all work and no play making Jack a dull boy; but it did not make either Jack or Jill dull at their studies. Possibly it might not verse them in topics which would add to the gaiety of a dinner party, but to do so was not their business. The author of *Confessio Medici* had recorded the speech of a patient to a friend of his: "I don't want my doctor to talk to me about the National Gallery." That was a shrewd saying. Patients wanted their doctor to have had some one else with just their complaint, only worse, but who had nevertheless got well; and cared far more about that than that their doctor should be an artist of no mean standing, or an enthusiastic student of Browning. The majority of their patients would be poor people, and common sense would be of assistance in dealing with them. It would lead them, for instance, to avoid saying to a dirty, frowsy, old woman from Whitechapel, "Do you take a daily sponge bath, Ma'am?" as the speaker had once heard a young house-surgeon say. It would prevent them, too, prescribing champagne and oysters for a private patient whose income was under 30s. per week. The patient might try to get them and succeed, but they would not do her much good, and one result would be a request that the medical attendant's account should be allowed to stand over indefinitely. Dr. Jane Walker concluded by quoting the following lines from Pope:

> Something there is more needful than expense,
> And something previous e'en to taste—'tis sense.
> Good sense, which only is the gift of Heaven,
> And, though no science, fairly worth the seven.

The proceedings ended in a very animated tea party.

THE MIDDLESEX HOSPITAL.

The arrangements in connexion with the opening of the winter session at the medical school of the Middlesex Hospital made Tuesday a very crowded day. In the afternoon the proceedings, which took place under the chairmanship of H.S.H. Prince Alexander of Teck, took the form of a prize-giving day. The awards were to have been distributed by Sir Charles Wyndham, but as illness unfortunately rendered him unable to attend, Prince Alexander himself stepped into the breach so far as the students were concerned, while the Fardon memorial medals and certificates for nurses were handed to their recipients by Mrs. Aston Binns. A report on the working of the school during the past year was read by the Dean, Dr. Campbell Thomson, and a short address on the genius of the infinitely little was given by Dr. Lazarus-Barlow. In its course he referred to some of the more striking properties of bacteria, enzymes, and radium radiations, as illustrative of his subject. In regard to bacteria and enzymes, the very magnitude of the results ensuing from their action frequently obscured recognition of the specific characteristics of the agents themselves. Nevertheless, it was owing to the precise performance of its functions by each separate ultimate particle that the final result was due. In regard to radiations from radium, he gave some account of recent discoveries of the action of radiation on various biological tissues and fluids, and more particularly of their destructive effects on bacteria. The fact that bacteria are destroyed by the alpha and beta radiations more rapidly than are the cells of the body seemed to him to foreshadow the utilization of radium in the treatment of bacterial diseases as well as in the treatment of cancer. The speaker concluded by an appeal to students to follow in the steps of those past practitioners of the healing art who had manifested the genius of the infinitely little by steadfast performance of their various duties. Thus would those who were now taking the first step towards entering the medical profession assist in maintaining that high reputation for honour and beneficence with which it was so liberally credited by the public. The afternoon's proceedings concluded with votes of thanks to Prince Alexander of Teck and Dr. Lazarus-Barlow, the guests then taking tea at the Nurses' Home and exploring several of the departments of the hospital. The evening was devoted to a dinner at the Trocadero Restaurant, where many past and present students gathered under the chairmanship of Dr. Campbell Thomson. The latter himself took charge of the toast to the hospital and the school, and in proposing it described various structural changes which had been effected during the past year; they all helped to secure efficiency in the work which was being carried on. He also recorded sundry changes in the staff of the school and hospital, and the honours which had fallen to the lot of several of its members. Academically the past year had been quite satisfactory from the point of view of the school authorities, while the record of work done on the athletic side was also good. In regard to the coming year, thirty students had entered their names for the general course, in addition to a corresponding number of students in dentistry, and others who had entered for various special courses. Dr. Campbell Thomson concluded by coupling the toast with the name of Mr. W. E. Gillett, who as chairman of the school council had done much to ensure the continued success of the school. In acknowledging the toast, which was received with enthusiasm, Mr. Gillett expressed his regret that Prince Alexander of Teck, who had done very much more for the hospital and school than himself, was prevented from being present. The governors greatly appreciated the exertions of the medical staff on behalf of the joint institutions, and felt that in Dr. Campbell Thomson they had an officer who filled a very important and difficult post most admirably. There was no school where a young prospective medical man had a better chance of learning his work, nor any at which in after-life he could be more proud to have passed his student days. The toast was also acknowledged by Fleet Surgeon Robert Hill, R.N., and Mr. T. L. Hardy. The only other toasts were those to the guests, which was proposed by Sir Pearce Gould and acknowledged by Lieutenant-Colonel H. E. R. James, and to the Chairman, which was proposed by Sir John Bland-Sutton. During the course of the evening several artists from the Palace Theatre gave short entertainments.

ST. THOMAS'S HOSPITAL.

The medical school of St. Thomas's Hospital was again one of those which commenced the winter session without other ceremony than the holding of an old students' dinner. This took place at the Hotel Cecil on Tuesday evening. But it was differentiated from an almost stereotyped succession of these annual functions by the presence in the chair, on his birthday, of the octogenarian Lord Mayor of London, himself a St. Thomas's man. To Sir Thomas Crosby it fell to propose the principal toast, that of "The Hospital and Medical School," and in doing so he chatted in a very interesting fashion about the St. Thomas's of his earlier memories. He thought that the present building, which was very different from the one he first remembered, was unequalled for its imposing character by any other hospital in the metropolis. Nor could any other hospital boast such an arterial stream of fresh air as that which the Thames tides brought to its doors and windows. He linked the toast with one of his own suggestion—"The continued prosperity of the medical profession." The time had arrived when the medical man should be up and active in municipal and corporate capacities. If the profession did not aspire to the public arena, and did not stand together to maintain its position, it was in some danger of being thought little of because it little demanded. A response to the toast was forthcoming from the Hospital Treasurer (Mr. J. G. Wainwright, J.P.), who said that the Governors were fully alive to the need for fostering research, and they were about to institute another advance in the shape of the clinical pathology department. New provision for the out-patients was also demanded, but it would be foolish for them to attempt to complete their plans until they knew exactly how they would be affected by the Insurance Act. A new out-patient department

such as they contemplated would cost £60,000 to £70,000, and towards that sum he was able to announce the handsome donation of £20,000 from a friend of his who desired to remain anonymous. It is to the Dean of the Medical School that one looks for the necessary humour at a students' dinner, and Dr. E. STAINER rose to the occasion. After reciting a formidable list of honours gained and appointments secured by St. Thomas's men, and of changes made in the hospital staff during the year, he concluded by telling in a whisper of a memorable event which has shaken the school to its foundations: "Dr. —— has got a new black bag." He also offered the congratulations of the company to one prominent member of the teaching staff on his attaining the joys of parenthood. The Dean said that he met him walking along the corridor at the head of his class, apparently immersed in clinical study. But when the happy father saw him, the remark he made, with an air of tremendous importance, was: "Weighing-day to-morrow." The health of the Chairman was proposed by Dr. H. P. HAWKINS, who referred to the wonderful manner in which Sir Thomas had dovetailed into a professional career a whole second life of municipal activity. The LORD MAYOR, in his response, said that on his election he received a letter asking for the secret of his healthy age, and saying that the writer would make it worth his while. A wholesome fear of any hints he might let fall being adapted for advertising purposes, and of seeing on the "ninth" a banner with the device, "Buy the Lord Mayor's live-long pills," deterred him from replying. His resolve to let his election go forward, he added, was due to the discovery by a literary personage that there was no record of a medical Lord Mayor, and he decided that he would show to the world the stuff and grit that were in his profession. Sir Thomas was accorded a great ovation on leaving the chair at 10.15 to address yet another gathering. Subsequently Mr. J. H. FISHER proposed "The Guests," and Mr. H. F. HEATH, C.B., of the Board of Education, responded.

KING'S COLLEGE HOSPITAL.

AT the medical school carried on in connexion with King's College Hospital the authorities have contrived to reduce the less necessary factors concerned in the beginning of a new school year to perhaps their simplest possible expression. In recent years there has been no address or other opening ceremony, nothing even in the way of a formal dinner, for though dinners have annually taken place, the underlying idea has been to give them as much the character of family assemblies as may be. The same plan was followed this year, past and present students, to the number of upwards of a hundred, gathering once more at the Waldorf Hotel around a number of separate tables. Professor NORMAN DALTON, physician to the hospital, was in the chair, while the only laymen to whom the privilege of being present was accorded were Captain Tunnard, the Secretary of the hospital, and Mr. Clifton Kelway, Secretary of the Removal Fund appeal. Likewise in accordance with established custom only two toasts were allowed—that to the King, and to the hospital and its school. In proposing the latter Professor DALTON recorded several changes on the staff that have taken place during the past year, and concluded with an expression of a hope that next year's dinner will celebrate the actual opening of the hospital at Denmark Hill. It was, he said, rapidly approaching completion, and there seemed reason to believe that it would be in full working order by the beginning of the winter session of 1913. The dinner was organized by several honorary secretaries, with Mr. F. F. Burghard, surgeon of the hospital and lecturer on operative surgery in the school, at their head, and the evening was voted a great success. Among its pleasant features were recitations by Dr. d'Este Emery, some of Dr. Harry Lavies's inimitable topical ditties, and songs by Mr. Milner.

A LADY almoner has been appointed at the General Lying-in Hospital, York Road, S.E. This is said to be the first appointment of an almoner at a lying-in hospital. The lady, Miss Sketchley, was trained by the Hospital Almoners Council, 296, Vauxhall Bridge Road, S.W.

LITERARY NOTES.

IT is announced that the Right Hon. Dr. Farquharson, of Finzean, has another book of reminiscences almost ready for publication. It is entitled *The House of Commons from Within, and other Reminiscences.* It will deal with the way in which things are done at Westminster, from the manner in which the public are made acquainted with what members are saying, to arrangements for feeding our law-makers.

The Child, the medico-educational monthly journal edited by Dr. T. N. Kelynack and published by Messrs. Bale, Sons and Danielsson, Limited, is, we are glad to learn, increasing in strength and favour. With the October issue it commences its third volume. The journal is devoted to all interests relating to child welfare, and it has the influential support of leading doctors and educationists.

The Librairie Générale des Sciences Occultes of Paris is publishing by subscription a French translation of the complete works of Paracelsus. The translator is M. Grillot de Givry, and the text has been collated with the German editions. The title of the work is *Oeuvres Complètes de Philippe Auréolus Théophraste Bombast de Hohenheim, dit Paracelse. Traduites pour la première fois en Français et collationnées sur les éditions allemandes par Grillot de Givry. Paris, 1912.*

The October issue of *The Arena* contains an article of special interest, entitled "What is a University?" by Dr. Alex Hill. Professor Herbert A. Strong contributes Reminiscences of the University of Melbourne. An article deals with Modern Education in India, the subject being viewed from the standpoint of an Indian; and another with "Universities and the Residential System." Among the remaining contents of a very interesting number are a finely illustrated article on Stonyhurst College; a beautiful series of Oxford drawings by Mr. John Key (Some Aspects of Magdalen Tower); a collection of candid writings by well-known authors, "In Abuse of Cambridge," and an article dealing at some length with many of the famous Harrow School songs. Sport is represented by an illustrated article on Cross-Country Running, by an old Oxford long-distance runner, and some instructive notes on the cost of pheasant rearing, by Mr. Frank Bonnett.

The art of soup making has never been thoroughly understood on this side of the Channel. If one excepts the delicious broths of Scotland, it would seem that it has been left to Frenchwomen to discover the secret of evolving a nourishing meal out of a few onions, some pieces of stale bread, and a pint of cold water; and it is therefore something of a shock to find a Frenchman casting doubts upon the value of soup as a foodstuff. Dr. V. Ch. Lefèvre, in an article which appeared in the July number of *L'Hygiène*, is very sceptical concerning its much-vaunted nourishing properties. He admits that, used in moderation, it may form an excellent stimulant for an invalid or a convalescent; but it is extremely indigestible, he declares, for all valid persons save those who labour all day in the open air, and are therefore in a condition to digest anything. Thick soups are particularly noxious, and should be carefully avoided, especially at night; and even clear ones should only be taken in small quantities, thoroughly masticated (a somewhat difficult proceeding, one imagines) and eaten very slowly. The true function of soup, we learn, is not to nourish, but to act as an *apéritif;* and for this purpose it should be consumed an hour before, instead of at the beginning of, a meal, a counsel of perfection which will probably prove a stumbling-block even to the most ardent food reformer. The question of food values also enters into M. Francis Marre's discussion on the danger of ptomaine poisoning from tinned sardines, which likewise appeared in the July number of *L'Hygiène.* The same number also contains some interesting advice to mountain climbers from Dr. J. Laumonier, and an article by Dr. Maurice de Fleury on the increase in infant mortality in France during the summer months; whilst Dr. Kermogant has contributed some striking details as to the important part played by medicine in the work of colonization.

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MODEL SCHEME FOR THE TREATMENT OF TUBERCULOSIS.

The two months which have passed since the Annual Representative Meeting decided that the profession was justified in consenting to work the sanatorium benefit part of the National Insurance Act have been months fraught with much anxiety to all those interested in the unity of the profession and the well-being of the people. Although the decision to work this part of the Act was thought by many members to be a mistake in tactics, yet these members have sunk their own individual notions, and are now, along with the rest of their brethren, working or preparing schemes for the treatment of tuberculosis to include sanatorium benefit. This action has clearly demonstrated that the profession never intended—as some of our contemporaries basely said they did—to leave the poor consumptive to die. Its long and honourable record of devoted toil for the sick poor has become in the profession of to-day a mental attitude which its members could not change if they would.

Besides the difficulties inherent in the scheme itself, and those due to the unpreparedness of the Government when sanatorium benefit was brought into force, complicated as it was by a general scheme for the treatment of tuberculosis, the State Sickness Insurance Committee, in carrying out the instructions of the Representative Meeting, encountered further difficulties owing to the fact that each Division was authorized to make its own arrangements with the local authority, subject only to the approval of the scheme by the State Sickness Insurance Committee acting for the Council. This necessarily gave rise to local negotiations with all their attendant risks to the profession, and is accountable for most of the suggested departures from the findings of the Representative Meeting. Difficulties also arose in respect to administration in sparsely populated areas. It was soon apparent that, unless sparsely populated areas amalgamated for the purpose, they would not provide enough work to employ a whole-time tuberculosis officer, whereas densely populated and poor areas of large towns would easily afford ample material. Another point which called for careful consideration was the status of provisional and permanent schemes, for it was felt that unless the provisional scheme was on sound lines the permanent one would probably be unsound. Indeed, no sooner was a question from some northern Division settled than south, east, and west pressed forward with their difficulties. Should the medical officer of health be the chief tuberculosis officer? Should there be treatment at the dispensary? Where was the general practitioner to come in? What is the State Sickness Insurance Committee doing, and why does it not give a more distinct lead? These and a hundred other questions cried loudly for answers, and now, in answer to these, the State Sickness Insurance Committee has issued a model scheme, which is published in the Supplement, p. 374. It would have been well if it could have come sooner, but even members of committees and hard-worked officers need holidays, and their work improves after a break. The model scheme is based on an interim report from the Sanatorium Subcommittee of the State Sickness Insurance Committee, which did not deal with arrangements for hospitals and sanatoriums—a subject which will doubtless soon be considered by the Committee, when a further report will be made to the Divisions.

The model scheme may be commended to the careful study of every member of the Association and to the full consideration of Provisional Medical Committees and Divisions. Doubtless this consideration will lead to criticism and to suggestions for improvements, but when this is done there will, we believe, be general agreement that with no uncertain sound the decisions come to at the Liverpool meeting are here correctly applied. A careful perusal of the document shows that the fundamental principles are the welfare of the patient, the yoking together of the private doctor with the tuberculosis officer, and the linking up of the various units of the scheme. According to the scheme of the Local Government Board, the tuberculous patient may be any person in the community; such patients may be classed as the well-to-do, who will get treatment otherwise than through the Act; the very poor, who will come under the Poor Law administration; the insured for whom the Act specially provides, and the uninsured, a poor class not provided for by the Poor Law. For this last class the model scheme insists on like treatment as for the insured. But be it noted that it goes further and says that the flotsam and jetsam of humanity included in the uninsured class should have a home doctor who will help them to get proper treatment at the beginning of their illness and will take a continuous personal interest during its course. The Government has not yet given any indication of its intention as to the treatment of this class, but the sooner it does so the better.

When the general practitioner compares the position—the absolutely necessary position—assigned to him in the model scheme with that given him in the Astor report, he will recognize the great value of the work done by the State Sickness Insurance Committee in this regard. In dealing with the exceedingly difficult problem of the kind of work which should be done at the dispensary, the Committee gives a definition in paragraph 13, and the whole of the paragraphs under the heading "Dispensary Treatment" will well repay perusal. Whatever may be the ultimate result of the doctors' fight for liberty, they must needs be thankful to the Government for making them a great united profession irrespective of party politics. Nowhere can this be more clearly seen than in the suggestions made under domiciliary treatment for the consultations between the Chief Tuberculosis Officer and the "private" doctor. Clearly here they meet as doctors, members of the same profession, bent, each in his own sphere, on working in harmony to carry out sympathetically the scheme for the benefit of the consumptive patient.

In considering the scale of fees under the scheme, it should be noted that it is a scale of minimum fees, and therefore subject to improvement. Indeed, in some Divisions several of the items have been increased in amount, and, of course, circumstances may arise in which this is necessary. It must be remembered, however, that the money at the disposal of the Insurance Committees for payment of fees for sanatorium benefit proper is very limited, and the

tendency will be towards economy; should, therefore, the doctors' fees be unreasonably high, the committees might be glad to increase the work of the whole-time officer (without increasing his salary), and thereby take some of the work out of the hands of the general practitioner.

The other matters discussed under the scheme—staff, and procedure in providing treatment—carry out the decisions of the Representative Meeting, and of the Local Government Board Order adding the necessary details for effectively working them. Altogether the various parts of the scheme dovetail into each other, and form a well-balanced whole, which if cordially and sympathetically carried out may do as much as can be expected from any scheme designed for the cure, and not for the prevention, of tuberculosis.

UNIVERSITIES AND MEDICAL EDUCATION.

THE question of a university education as preparatory to professional training has been discussed by many men of the highest intellectual endowment. Roughly they may be divided into two classes, which may, "without prejudice," to use the saving formula of the lawyer, be called the liberal and the utilitarian. On the one hand, we have the great philosopher Locke writing as follows: "Can there be anything more ridiculous than that a father should waste his own money, and his son's time, in setting him to *learn the Roman language*, when at the same time he *designs him for a trade* wherein he, having no use for Latin, fails not to forget that little which he brought from school, and which 'tis ten to one he abhors for the ill-usage it procured him? Could it be believed, unless we have everywhere amongst us examples of it, that a child should be forced to learn the rudiments of a language which *he is never to use in the course that he is designed to*, and neglect all the while the writing a good hand and casting accounts, which are of great advantage in all conditions of life, and to most trades indispensably necessary?" It is clear from this that the author of the *Essay Concerning the Human Understanding* thought any teaching which tends to the general cultivation of the mind superfluous. This is an extreme expression of the view that all education should be deliberately shaped as a preparation for what the Germans call "bread studies." The opposite view is admirably set forth by John Henry Newman in his *Idea of a University*. We have not space to discuss the subject here, but we may be allowed to give some extracts from an essay by Davison, who is quoted with evident approval by Newman: "Of the intellectual powers the judgement is that which takes the foremost lead in life. How to form it to the two habits it ought to possess—of exactness and vigour—is the problem. . . . We may safely lay it down that they are not to be got 'by a gatherer of simples,' but are the combined essence and extracts of many different things, drawn from much varied reading and discipline first and observation afterwards. For if there be a single intelligible point on this head, it is that a man who has been trained to think upon one subject, or for one subject only, will never be a good judge even in that one. . . . Judgement does not stand here for a certain homely useful quality of intellect that guards a person from committing mistakes to the injury of his fortunes or common reputation; but for that master-principle of business, literature and talent which gives him strength in any subject he chooses to grapple with and enables him to seize the strong point in it." Probably no one could be found now to maintain with Edgeworth, the father of the novelist, that a boy intended for the medical profession, for instance, should be kept rigidly to pharmaceutical chemistry and a knowledge of medicinal plants. But there are still many who hold that his time should be spent in acquiring knowledge that may be useful to him rather than (in the words of Locke) in having his head stuffed with a great deal of trash, "a great deal whereof they usually never do ('tis certain they never need to) think on again as long as they live; and so much of it as does stick by them they are only the worse for."

Dr. Rolleston has dealt with the subject in a broad-minded way in his introductory address on universities and medical education, an abstract of which appears on p. 886. He fully recognizes that the medical graduates of a university should have a groundwork of general culture and scientific discipline on which their technical knowledge may be superimposed, otherwise their training would in no way differ from that given by a technical school. But while admitting that a really good classical training is valuable in some respects, he holds that the bulk of medical men pay somewhat dearly for whatever aroma of classical culture may still cling to them in late middle life. There seems reason, he says, to believe that a classical education does not give the average man any considerable advantage in science and medicine. As to this Dr. Rolleston differs from several scientific authorities who maintain that a classical training is an excellent preparation for a scientific career. Among these may be mentioned Dr. Alex Hill, formerly Master of Downing, and Vice-Chancellor of the University of Cambridge, and Professor Victor Vaughan, Dean of the Department of Medicine and Surgery of the University of Michigan. It should not be forgotten that nearly all the great medical discoverers down to comparatively recent times had received a classical education. John Hunter is an exception; but would not his writings have been less cryptic had he been trained to precision in the use of words, which after all implies precision of thought? How much do we suffer from lack of the same training at the present day! Beyond question, the want of power to express one's meaning clearly and unambiguously, the misuse of words and the misapprehension of their exact purport when employed by others, too often conspicuous in medical controversies, are the direct outcome of "modern side" education. It is owing to the want of the classical training which gives, as nothing else does, a sense of literary form, that medical books are proverbially ill written. It is nothing to the purpose to say that great scholars do not always write good English; they become so supersaturated with the ancient tongues that they are unable to handle their own. We do not want to manufacture pedants; it is the training in minute accuracy and the faculty of distinguishing fine shades of meaning that matters. This no living language can give in anything like the same measure, as the structure and phraseology—even the meaning of words—are subject to subtle but unceasing changes. A training in Greek and Latin, however little knowledge of the tongues themselves remains in after-years, leaves ineffaceable marks on the mind; it prevents to a great extent not only the slovenliness of expression, but the inaccuracy as to facts often displayed by scientific men when they come down into the arena of controversy. We are in hearty agreement with Dr. Rolleston in his suggestion that the dead languages should be taught earlier and better, and that the time spent on them

should be rearranged and curtailed. He suggests a compromise. Boys should be taught on the consecrated lines till the age of 15½; then they should learn French and German, English composition, physics and chemistry. At the age of 18 or thereabouts they should begin the study of biology and of anatomy and physiology. Their proficiency should be tested at each of these stages of their education. This seems to us a sound scheme, combining the advantages of the old and the new.

We cannot follow Dr. Rolleston through his discussion of the still vexed question whether the preliminary scientific education required of candidates for the medical profession should be given in schools; nor can we deal with the extent and manner of the teaching of anatomy and physiology at the university. What he has to say on these points deserves consideration as representing the fruits of the experience of a thoughtful teacher, but when he comes to clinical teaching he enters on very debatable ground. He wishes to combine the teaching of the applied science of medicine with the pursuit of the pure science. To ensure this arrangement he proposes that professors of medicine, surgery, and gynaecology should be provided with several assistants of proved ability, who, besides taking an active part in teaching under the direction of the professor, should pursue special investigation in some department. As an alternative he makes the revolutionary proposal that the professorships should be held by men who should devote themselves entirely to the work of teaching and working at their respective branches of medical science. The whole-time professor should be appointed at an age that would give a reasonable prospect of twenty years of active work. He would be debarred from private practice, or would be limited to a stated extent from undertaking such work. This would necessarily mean a great increase of salaries if the chairs are to attract men of the right kind. But a far more serious objection, in our opinion, would be that if suitable men could be got they would inevitably become more or less fossilized as they became older. There would be a risk of their degenerating into academic pontiffs who would of their very nature tend to conservatism, and who from the habit of speaking *ex cathedrâ* would become intolerant of the free criticism which is as the breath of life to progressive science. They might even in time become like unto the doctors of Strassburg, who when told that, as a matter of fact, a thing happened otherwise than they said, replied that it ought not! The physician at whose feet the student is most eager to sit is a man who is "in the movement," if we may use a questionable phrase; who is in the forefront of the battle; who does not wear the panoply of an artificial dignity, and whose work is exposed to criticism from every side. We think that this question was decided many years ago. It is recorded in Trevelyan's *Life of Macaulay*, that Prince Albert was anxious that Oxford and Cambridge should become schools of medicine in the fullest sense. He asked Macaulay why these universities could not command the services of men of the first rank in practice as a university like Heidelberg succeeded in doing. Macaulay replied that a man earning £10,000 a year in London could hardly be got to retire into the unprofitable seclusion of a provincial town which happened to be the seat of a university. Hence there was, in his opinion, no chance that the academic chairs would be filled by the heads of the profession. There is, therefore, the economical difficulty, which to our mind is insuperable; and there is the further difficulty that physicians and surgeons of the highest order cannot be formed in cloistered shades. They can retire there when, after an arduous life, they long for dignified leisure, and they can do immense good by shedding the lustre of a great name on the university which is fortunate enough to secure them. But as a career for young men with the ambition to make a name in the practical part of their profession, a whole-time professorship does not commend itself to us.

THE REGULATIONS FOR MEDICAL BENEFIT.

The Provisional Regulations for Medical Benefit under the Insurance Act are being issued this week, and by the courtesy of the Commissioners we are able to print the full text in the Supplement.[1] We venture to urge every member of the medical profession not to accept any paraphrases, abstracts, or glosses of the Regulations which may be published in the daily press or elsewhere, but to read the Regulations as a whole in the full text. They are not very long, and for a document of the official legal kind the phraseology and arrangements of the paragraphs, with the exception perhaps of those dealing with the adjustment of financial business, is clear, so that whatever its merits or demerits the general scope and purport of the scheme embodied in the Regulations is not difficult to grasp by the expenditure of a reasonable amount of time and attention. The critical examination of details will, of course, be a much more laborious task, which the State Sickness Insurance Committee will undertake without delay, in order that it may report to the Council at the earliest possible moment. Meanwhile a few words may be said on the main trend of the Regulations and on the effect they might be expected to have on the efficiency of any medical service, should circumstances arise which might render the institution of such a service possible.

The general idea of the Commissioners would seem to have been to hand over the administration as far as possible to the local (County) Insurance Committees acting, in respect of various matters affecting the medical profession, after consultation with the local Medical Committees, the Commissioners being held in reserve as a court of appeal. In this, no doubt, effect has been given to the specific provisions as well as the general intention and purpose of the Act, but this devolution has been carried so far that local controversies, which must increase the difficulties of the situation, would be almost certain to arise, should the profession consent to work under the Act.

Each Insurance Committee is to make a scheme for medical benefit, and must consult the local Medical Committee with regard to it, and with regard to the amount and method of remuneration of medical practitioners. The agreement to be made with individual practitioners under any such scheme must be in accord with the terms and conditions which are specified in a schedule, and the method of remuneration may be any one of five different plans set out in another schedule, including payment by capitation, payment by attendance, and combinations of these systems. The Insurance Committee is to inform each approved society of the amount which it is to pay in respect of the cost of the medical benefit of its members resident within the county. Each Insurance

[1] The text of the Model Rules prepared by the Insurance Commissioners for the guidance of County Insurance Committees in making rules under paragraph 8 of the Regulations has been supplied to us as we go to press, and has been appended to the Regulations as printed in the Supplement.

Committee is to submit its scheme to the Insurance Commissioners for their approval, and the Insurance Committee, if it has failed to come to terms with any approved society, is to notify the Commissioners of the terms so refused, and the Commissioners are to determine the amount to be paid by the society. Before approving any county scheme the Commissioners must consider any representations made to them by the local Medical Committee.

No attempt is made in the Regulations to ensure a uniform income limit throughout the country; each County Insurance Committee is to have power to fix such a limit, but is not required to do so. It appears therefore that the Commissioners contemplate negotiations which might well end in controversies in each county. The introduction into the Regulations, however, of paragraphs laying down the manner in which an income limit might be fixed and enforced ought to be taken by Insurance Committees as an indication of the Commissioners' opinion that the intention of the Act is that a committee shall prescribe an income limit, and in particular that the onus of proof that his income does not exceed the limit shall rest on the insured person as the British Medical Association desired. As the Regulations stand, the question will have be settled in each county or county borough after controversies in which the medical profession will be at a disadvantage, owing to the fact that the majority of an Insurance Committee will consist of representatives of insured persons. This disadvantage can only be neutralized by the maintenance undiminished of the union of the profession for combined action, of which so many satisfactory evidences have recently been afforded. The provision that the Insurance Committee before fixing, varying, or abolishing an income limit shall consult the local Medical Committee does not adequately meet the point, and will not avoid local controversies, for it will be open to the Insurance Committee to disregard the opinion of the local Medical Committee, which does not seem to have any right of appeal to the Commissioners on the point. Its importance is not diminished by the fact that the Regulations do not seem to touch the case of a person who, having been an insured person for five years, is, under Section 1 (3), apparently entitled to continue to be insured even though his income has come to exceed £160 a year.

The Harmsworth amendment permitting the continuance of any institution for medical treatment is reflected in the Regulations. The medical profession has from the first objected to this, mainly on the ground that it may perpetuate the evils of the system in its worst form, and must in practice operate to limit the free choice both of patient and of doctor. It appears to be contended that Paragraph 16 of the Regulations will diminish this objection, inasmuch as the treatment given by the institution must, in the judgement of the County Insurance Committee, be adequate, that every insured person shall be entitled to terminate his agreement on giving reasonable notice, and that no institution will be recognized until all its rules, terms, and conditions have been approved by the Commissioners. The definition of the term "institution" is "a system or institution existing on the 16th December, 1911, and providing medical attendance and treatment"; it is, we believe, interpreted by the Government to include works clubs, as well as medical aid institutions commonly so called, and, unless specifically safeguarded, there is a risk that it may be given an even wider scope. The term "adequate" is undefined; it is vague, and may easily lead to disputes between the Insurance Committees, upon which, it must be remembered, representatives of friendly societies will form, if not the majority, at least the most numerous and coherent group, on the one hand, and, on the other, not only the medical profession, but the Insurance Commissioners also. It is an important matter, and the Commissioners might have been expected to retain it in their own hands, or at least to have given a clear lead to local bodies.

The Regulations contain elaborate provisions as to the methods of remuneration and as to the methods of ascertaining the amount to be paid to each individual practitioner who may accept service under the Act, but nothing whatever as to the amount. It is generally understood that the Chancellor of the Exchequer is prepared to ask Parliament to provide an increased contribution from the State to the Insurance Fund. As will be seen, the Chancellor of the Exchequer informed the remaining medical members of the Joint Advisory Committee, who had an interview with him on October 2nd, that he would confer with the Cabinet at the earliest possible date, and hoped to be in a position to make known their decision in the course of the week beginning October 14th. It is much to be hoped that this intention may be carried out, for until this information is available an essential element in the formation of a judgement on the Regulations is wanting.

The Insurance Commissioners do not seem to have used the power conferred upon them in the Act (Section 78) to modify its provisions with the view of meeting any of the criticisms or objections advanced by the British Medical Association on behalf of the profession. The Regulations keep strictly within the four corners of the Act, but their general effect is to produce the impression that the intention is to throw as much responsibility as possible on to the profession for the efficient administration of medical benefit should the profession as a whole eventually consent to undertake the task. In so far as this intention exists and has found expression in the Regulations, it may be said to be in accordance with the desire of the profession to retain the control of its own work and affairs, and so far, therefore, the Regulations may be considered to show a spirit not unfavourable to the views expressed by and through the British Medical Association. They are, however, vague on points which the Association holds to be of cardinal importance. This, it may be said, was inevitable, but it is none the less to be regretted. The policy of handing over the adjustment of so many important matters to the County Insurance Committees, although in respect of certain matters it is in accord with the desire of the British Medical Association that such points as, for instance, the method of remuneration, should be left to local decision in consultation with the profession in the locality would, it is to be feared, lead to sectional controversies all over the country, a result to be deplored in the interests of the profession and of the insured. The British Medical Association must now consider whether the Regulations, taken in conjunction with the final monetary offer of the Government, afford a basis on which the profession can be advised to co-operate in working medical benefit. A decision can, of course, only be taken after a full consideration of the matter by every Division; and the report of the Council to the Divisions, preparatory to the holding of the Special Representative Meeting, will be awaited with keen interest, but it may be doubted whether it can usefully be issued until the Chancellor of the Exchequer has defined his proposals with regard to remuneration.

METHODS OF REMUNERATION.

THE second part of the first schedule of the provisional Regulations for the administration of medical benefit sets out five different systems upon which the remuneration of practitioners undertaking treatment under the Insurance Act may be based. The first (A) is a capitation system pure and simple. The second (B) is a capitation system *plus* payment for what are classed as special services; a practitioner would receive a certain sum in respect of each insured person included on his list, and in addition would be paid at a rate (not yet fixed) for special services, the special services including a special visit, a night visit, consultations, surgical operations requiring local or general anaesthesia, the treatment of fractures or dislocations, the administration of a general anaesthetic, the treatment of tuberculosis in so far as the patient is not entitled to obtain such treatment as part of sanatorium benefit, and the treatment of abortion or miscarriage in so far as not included in maternity benefit. The third (C) is again a capitation system *plus* payment for ordinary as well as special services. Under this scheme presumably the capitation would be smaller, but in addition to the special services enumerated under (B) there would be payment for ordinary visits at the patient's residence, or ordinary attendance by the patient at the practitioner's residence, surgery, or dispensary. In (B) and (C) the capitation payment would have priority of payment as a charge on the fund. Under the next scheme (D) payment for special services would take priority, and the amount of capitation paid would apparently depend upon the amount remaining after the special services had been paid for. The capitation received under (D) might be, therefore, greater or less than the capitation received under (B). The fifth scheme (E) is a system of payment for attendance, pure and simple, without any capitation. The five systems would appear to render it possible to meet, at any rate the majority, of the many suggestions which have been made with regard to the method of remuneration, but the sections of the Regulations dealing with the amount applicable for the payment of practitioners (28), and the calculation of the remuneration under the several systems (29), clearly call for very careful scrutiny. The County Insurance Committee at the end of each year would determine the total amount to be applied in defraying the cost of the medical benefit of insured persons obtaining treatment from practitioners on the panel, and would then ascertain the cost of the provision of drugs and prescribed appliances and of mileage, and the amount equivalent to the cost of medical benefit on insured persons during periods of temporary residence outside the county. The third deduction would appear to be merely a matter of book-keeping. The amount thus arrived at is to be deducted from the total amount, and out of the remainder, termed the "net fund," individual practitioners on the panel would be remunerated. Where a capitation system pure and simple was in force, the County Insurance Committee would credit to each practitioner on the panel an amount, called a "capitation fee," in respect of each of the persons included on his list, calculated in accordance with the rate agreed with him. Where a system of payment by attendance pure and simple was in force, the committee would credit to each practitioner on the panel in respect of each service, the amount agreed for each such service. Having done this, the committee would ascertain the aggregate of the amount credited to each practitioner, and the grand total of the aggregate amount credited to all practitioners on the panel; it would then pay to each practitioner not necessarily the amount credited to him, but an amount bearing the same proportion to the sum credited to him as the net fund bore to the grand aggregate credited to all the practitioners. Where one or other of the combined systems was adopted, the committee would pay to each practitioner out of the net fund the capitation fees or attendance fees credited to him which are payable "in priority"—in systems (B) and (C) a capitation fee, and in system (D) the fees for special services—and out of the balance of the net fund an amount, in respect of other fees credited to him, bearing the same proportion to those fees as the balance of the net fund bore to the aggregate amount of such other fees credited to all practitioners on the panel. Every practitioner on the panel would be required to furnish a quarterly account to the Insurance Committee containing particulars necessary for calculating the amount of remuneration payable to him by the committee. The committee would then pay to the practitioner the amount agreed between it and the practitioners on the panel in advance of the amount due to him and the balance at the end of the year. But before paying the balance the Insurance Committee would be required to submit all accounts to a committee appointed by the practitioners on the panel, and this committee of practitioners would have power to reduce or disallow any item in any account. This elaborate machinery appears to have been devised not merely in the interests of economy, but as a part of a settled policy to discourage the abuse of drugs. That the belief in drugs and in big bottles of medicine has become something of a fetish with that section of the public to which insured persons chiefly belong — the wealthier classes have come to prefer systems of diet tempered by patent medicines and mineral waters—may be admitted. But there is a very real danger of going to the other extreme and putting obstacles in the way of the proper use of drugs from which sick and suffering humanity can derive much benefit and relief, as every one except the man "who has never known a day's illness"—and he usually has some private panacea—is well aware. The tendency disclosed in these provisions may be taken as a compliment, as an expression of confidence in the probity of the profession; but the original idea of separating altogether payments for drugs from payments for medical attendance possessed advantages which this ingenious scheme does not present.

LOCAL MEDICAL COMMITTEES.

THE importance of the duties which the Insurance Commissioners propose to assign to local Medical Committees will not escape the attention of any reader of the provisional Regulations for medical benefit. All the proposals are, of course, dependent upon the profession consenting to work the medical benefits under the Act, and accordingly to set up such local Medical Committees—one corresponding to each local Insurance Committee, and, therefore, as a rule, one for each county. Where a local Medical Committee has been set up it must be consulted by the County Insurance Committee with regard to the conditions of service upon which it is proposed to invite practitioners to undertake treatment and the method and rate of remuneration, including the rate to be paid in respect of mileage. Under Section 14 of the Act the Insurance Committee must prepare rules with regard to the administration of medical benefit, and in the preparation of these rules, which must eventually be approved by the Insurance Commissioners, the Insurance Committee must consult with the local Medical Committee. Before approving any arrangements with practitioners submitted to them by a County Insurance Committee, the Commissioners must consider any representations made to them by the local Medical Committee. Before fixing, varying, or abolishing an income limit, the County Insurance Committee must consult the local Medical Committee, and that committee may at any time, by notice in writing to the County Insurance Committee, dispute the right of an insured person to receive medical benefit on the ground that the income of that person exceeded the income limit. Any complaint made by an insured person against a practitioner who attended him under the

arrangements made by the Insurance Committee in respect of the discharge by the practitioner of his professional duties towards the insured person, or by a practitioner against an insured person in respect of the conduct of the insured person towards the practitioner, or any other complaint against a person or practitioner on the panel, would be referred by the County Insurance Committee to a special subcommittee, consisting of six members and a chairman. Of the six members three would be appointed by the local Medical Committee and three by and from the members of the Insurance Committee who represent insured persons; the chairman would be selected by the six persons, and would be one of those members of the County Insurance Committee appointed by the county council or by the Commissioners, who are neither insured persons nor practitioners. This Committee of Complaints would hear the complainant and respondent, a representative of the society to which the insured person belonged, a representative of the local Medical Committee, and any witness or assistant of either party, but not a barrister or solicitor. It would make a report to the County Insurance Committee on the facts, and state the inference it drew from them, and its findings as to the facts would be final. With regard to complaints falling into another category, those involving the efficiency of the medical service made by a practitioner on a panel against any other practitioner on the panel, they would be considered by the local Medical Committee, which would be empowered to apply to the Commissioners to remove the name of the practitioner from the panel or to take such other action as they might deem proper. The Commissioners would not themselves investigate the charge, but would refer it to an Enquiry Committee. The Joint Committee of the several bodies of Commissioners for England, Scotland, and Wales are to constitute a body of sixteen practitioners, and when any complaint is to be investigated would appoint a special Enquiry Committee consisting of two of the sixteen practitioners above mentioned, and two other persons, one of whom would be a barrister-at-law or a solicitor. This Enquiry Committee would elect one of its members to be its chairman, and would draw up a report to the Commissioners stating such relevant facts as had been established by the evidence and the inferences, if any, which, in the opinion of the Enquiry Committee, might properly be drawn from the facts so found. A local Medical Committee would also be empowered to represent to the Commissioners that the inclusion or continuance on the list of persons supplying drugs and appliances (a chemist or other person) would be prejudicial to the service in the county, and the Commissioners must thereupon hold an inquiry. The County Insurance Committee is to prepare a list of the prices which it is willing to pay for the drugs ordinarily supplied and for appliances, and the County Insurance Committee, if it proposes to revise its list of drugs and appliances, must consult the local Medical Committee before submitting its proposals to the Commissioners.

DRUGS AND APPLIANCES.

From the third part of the provisional Regulations for medical benefit, which deals with the provision of drugs and appliances, it appears that it is contemplated that every County Insurance Committee shall make arrangements for the supply by practitioners on the panel of drugs necessarily or ordinarily administered by a practitioner in person, and of drugs and appliances required for immediate administration or application, but that otherwise all drugs and appliances are to be supplied by chemists or other persons under agreements with the County Insurance Committee, except in districts where the insured person would have difficulty in obtaining necessary drugs and appliances by reason of distance or inadequacy of means of communication. In such districts the committee would be required to make arrangements for the supply of such drugs and appliances by the practitioner attending the insured person. In all other cases the practitioner would be asked to undertake to order drugs and appliances on a prescribed form, and the insured person would be entitled to obtain the drugs or appliances ordered for him by the practitioner attending him from any chemist or other person on the list of chemists who had arranged with the Insurance Committee to supply drugs and appliances. If a practitioner ordered a drug not included in the Insurance Committee's list for the time being, he must do so on a special form. The most practical and economical course in the long run would be to take the *British Pharmacopoeia*, prepared and published under the authority of Parliament, with the exception, perhaps, of one or two items such as cod-liver oil. It would be unreasonable and impolitic to forbid the use of any drug already recognized by the State; moreover, the prices of all official drugs are governed by the ordinary movements of the market and easily ascertained, and their quality and mode of preparation is laid down in the *British Pharmacopoeia*.

RESIGNATION OF CONTRACT PRACTICE APPOINTMENTS.

The action of the State Sickness Insurance Committee in recommending that in every area the resignations of contributory contract practice appointments in so far as they apply to insured persons should be sent in on September 29th has met with a response which is a most gratifying exhibition of loyalty to the Association. In making the request it was realized that the loyalty of the profession was being put to a very severe test, as many practitioners derive a large portion of their income from contract practice work, and in addition, apart from the widespread and growing feeling against the general conditions of contract practice, the relations of the medical officers to their contract patients have been on the whole friendly. The result of the test was never for a moment in doubt after the issue of the circular of the State Sickness Insurance Committee. Even areas which had been considered weak by the Committee, and some of which, indeed, were very doubtful as to the wisdom of sending in the resignations, took prompt action. The final results are not yet in the hands of the Association, but up to noon on October 3rd, out of 230 areas, 144 have reported that they have sent in 22,729 resignations, affecting 6,042 doctors. In addition to this, it is reported that in the case of some hundreds of appointments a much shorter notice than three months is necessary, and arrangements have been made whereby they will terminate on or before January 15th. From the same areas it is reported that 243 practitioners have not resigned, but of these quite a large number, though reluctant to resign their own appointments, will not accept any appointments resigned by their local colleagues. The number of those who have definitely declared that not only will they not resign, but that they are willing to accept resigned appointments is so small as to be negligible, and it is evident that in most cases the calibre of the practitioners who have taken up this attitude is such as to allow their colleagues to view their action with indifference.

THE MYSTERY OF THE MOTORS.

In the Journal of September 28th reference was made to an advertisement asking for tenders for 1,000 motor cars, to be sent to Dr. Charles Frederick Knight, Organizing Secretary of the "National Insurance Medical Association." In speculating as to the possible uses to which these cars were to be put, we threw out a conjecture that, as it was said that Dr. Knight held an office under the Scottish Insurance Commissioners, they might be intended in some way to facilitate the working of the Act. Dr. Knight informs us that he holds no office under

the Scottish Commissioners, and we withdraw the statement, which was made in all good faith under a misapprehension. But the fact that Dr. Knight holds no such office as he was said to hold only deepens the mystery of the motors. There is no doubt about them, for we have copies of the advertisement before us as it appeared in the *Daily News* and in the *Musselburgh News*. It is headed "The National Insurance Medical Association," and, with a subhead, "Tender for Motor Cars," goes on to say: "Tenders are invited for 1,000 motors, chiefly 12-h.p., to be delivered in Great Britain early in January. Further particulars can be obtained by writing to the organizing secretary, Charles Frederick Knight, M.D., 7, Chambers Street, Edinburgh, to whom tenders must be sent by October 18th." Reports of what purport to be interviews with Dr. Knight have appeared in the *Daily Express* (September 23rd) and in the *Evening Dispatch* of Edinburgh of September 26th. In neither of these is any particular light thrown on the motor mystery. To the representative of the *Daily Express* Dr. Knight stated that plenty of doctors could be got to work the Act; he said he could get 300 from London alone. As to the motor cars, he denied that the Government was finding the money, and said that a number of wealthy people were interested in his association. He added that probably 1,500 cars would be required. To the representative of the *Evening Dispatch* of Edinburgh Dr. Knight was more reticent, and the representative had to leave the presence of the organizing secretary "just about as wise as he entered it." One of the most puzzling points in the mystery is that the *Musselburgh News* should have been chosen as the medium of such an advertisement. It is an excellent paper, no doubt; but, as the *Autocar* says, "one might as well advertise for tenders for battleships in the *Malvern Advertiser* or the *Leamington Spa Circular*." Perhaps it would be well for Dr. Knight to get the men before he makes so large an investment in motors.

FINSBURY MEDICAL SOCIETY.

The Finsbury Medical Society gave on September 26th the first of what is to be an annual event—namely, a supper party. Dr. Hobbs Crampton (President) was in the chair, and some forty-two members and guests were present. The toast to the society, proposed by Dr. Southcombe, Honorary Secretary of the City Division of the British Medical Association, met with acknowledgement from Dr. Francis Roe, the Honorary Secretary of the society, who gave an account of the strenuous work that it had done in the way of promoting professional and social union during recent troublous times. He added that it had been a source of strength to the British Medical Association, and had recruited for it several new members. The toast to the British Medical Association was proposed by Dr. Evan Jones, who said that on the whole the Association had led the profession very well indeed, and had succeeded in supporting its interests during the stirring times in which medical men had been involved by the passage of the National Insurance Act. The position in Finsbury was that notice had been given of the resignation of every club or allied appointment within the area. The toast was acknowledged by Dr. Alfred Cox, Medical Secretary of the Association, who said that the profession was within sight of the greatest crisis it had ever known. To arouse enthusiasm and lay down minimum terms was comparatively easy, but the real test of statesmanship would come when the profession considered whether it would accept the terms offered to it by the Government in the regulations which were shortly to be published. When the profession had seen those regulations it would have to decide whether they constituted a system under which any self-respecting profession could consent to act, or whether an indeterminate period of anxiety and friction would have to be faced. Together with the regulations would have to be considered the final offer of the Government in respect of remuneration, for the two factors were inseparable so far as the medical profession was concerned. Another task before the profession was to convince the public that its final decision, whatever it might be, was conceived not only in the interests of medical men, but of the public itself, and in this task there should be no difficulty. The evening ended when a toast to the chairman had been proposed by Dr. J. J. Udale and duly acknowledged.

ICEBERG DETECTION.

Several daily papers last week contained statements to the effect that on its arrival at Quebec the R.M.S. *Royal Edward* had reported success in regard to the experiments conducted during the voyage with the system of iceberg detection devised by Dr. Myer Coplans. The ship took the northerly route across the Atlantic, and the ship's officers became aware of the existence of nine icebergs in its course before sighting them. The breaking away of ice-floes from the shores of the arctic region and their appearance in the track of vessels when least expected represents a problem of much importance, and it is not from the medical profession that the public would probably have expected its solution. Those, however, who are acquainted with the many-sidedness of medicine and the capacity for seizing upon new lines of thought which is secured by medical education will hardly be surprised if the palm is carried off by a medical man. The experiments in question, which are being conducted by Dr. Coplans himself, with the co-operation of the Canadian and United States Governments, originated, we believe, in some observations made by him while conducting a research into the effect on certain serum reactions of the passage of an electrical current. They were carried on at Leeds, where Dr. Coplans is demonstrator of bacteriology and public health at the university, and showed incidentally that the conductivity of the liquids he was using varied with their temperature. Finding that this was true also of salt water, Dr. Coplans, when methods of detecting icebergs were brought under discussion by the *Titanic* disaster, worked out a system which he hopes will prove that the alteration of water temperature caused by the presence of an iceberg for many miles around it may be utilized for revealing its existence long before a vessel comes within the danger zone.

REVISION OF THE MEDICAL REGISTER.

The Registrar of the General Medical Council, in a letter published this week, makes the same appeal to members of the medical profession to assist in the annual revision of the *Medical Register* which has been made at this season of the year on many previous occasions. The onus of notifying a change of address is placed by the Medical Act upon the practitioner himself, and though the Registrar makes every effort to ensure that the address of every practitioner is correct, if once he loses touch he may find it difficult or impossible to get into communication again. Should his inquiries be persistently neglected, as may occur if notice of change of address has not been given to him in due course, it may become his duty to remove the name of the practitioner from the *Medical Register* under Section XIV of the Medical Act. The *Register* is the only official list, and as such is consulted by courts of law, and in consequence of representations made recently by the General Medical Council, it is used by the Registrar-General, the Board of Trade, and other Government departments more often than it used to be.

The Harveian Festival of the Royal College of Physicians of London will be celebrated on October 18th, when the Harveian Oration will be delivered by Sir James F. Goodhart, Bart., M.D., at 4 p.m.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

CANCER HOSPITAL ELECTRICAL INSTITUTE.

ABOUT eighteen months ago we recorded the opening of a Research Institute in connexion with the Cancer Hospital (Free) at Brompton, S.W. This development has been quickly followed by another, relating to the *x*-ray and electro-therapeutic department of the same institution. Until recently this department was housed in a couple of rooms in the main building. Now it has entered into sole possession of a new building of two floors at the back of the hospital. The consequent reorganization of the department has been carried out with a single eye to efficiency. From the heating arrangements in the basement to the air-pump in the loft, there is scarcely a cubic foot of wasted space, yet there is no sense of crowding, and even in an electrical institute aesthetic considerations are not wholly sacrificed. The purpose of the building manifests itself in every detail, down to the system of dark-room blinds and the disposition of the electric plugs and fuse-boxes. It was a little difficult to overcome the reticence of the small staff, and to learn exactly who was responsible for all the ideas embodied in the general design, but the capable hand of the director, Dr. Robert Knox, has evidently been felt in every part of the undertaking.

One enters first a cheerful vestibule, where the waiting patients can sit in comfort. Beyond this is a small consulting room, with the radium safe, containing at present 250 mg., built into the wall. Adjoining is a double dressing room, and another door leads to the large apartment given over to radiography, with an annexe at its further end to serve as a dark room. Among the apparatus installed by Messrs. Siemens Brothers and Company, Limited, we noticed a single-impulse *x*-ray outfit, capable of exposures of almost one-hundredth of a second; a screening stand, incorporating every protective device that ingenuity can suggest; and a specially built radiographic couch, with an automatically moved tube box below. Instead of the customary protection for the tube box, the whole length and breadth of the couch are covered with protective material, and thus, while the safeguards are even more complete than usual, the adjustment of the tube is rendered easier and more precise. Protection, in fact, is the keynote of the whole institute. One has everywhere a reassuring, if rather oppressive, sense of armour plate; and it must be a difficult matter for the most vagrant *x*-ray beam to reach the operator, either here or in the therapeutic room above.

This therapeutic room occupies the whole of the first floor, and contains eleven cubicles, each of which has its electric plug, its cabinet for appliances, and its inlet and outlet for ventilation. Nearly all these screened-off compartments are equipped for a distinct electrical treatment. In one a Schnée four-cell bath is installed; in another a diathermy apparatus; a third contains one of the "universal machines" for providing the galvanic and other currents; in a fourth is a mercury-vapour lamp; yet another is devoted to high frequency. Some of the cubicles are curtained recesses, the idea being to secure privacy for the individual patient, which is no unimportant matter if the best results are to be obtained in certain branches of electro-therapeutics. Those that are not curtained are permanently enclosed, and the three cubicles in which *x*-ray treatment is administered are not only enclosed but are completely isolated. The operator in these cases directs the treatment from the outer side of the closed door. Each of the doors is a kind of sandwich of solid teak with a sheet of lead in the middle. The window, through which the operator is enabled to watch the steady running of the tube, is also of lead glass. The opening of the door automatically switches off the current. The coil is deposited on an upper shelf out of the way, and the apparatus that has to be manipulated is arranged in front of each little compartment. The latter includes a device for giving a "make and break" action to the current in the tube, so that the length of time during which heavy currents are passed may be prolonged. Another happy arrangement is a system of air-cooling for the tubes. The current from an air pump is carried along an india-rubber piping, and, this piping being attached to the *x*-ray tube, the air is directed upon both anode and cathode. At the other end of the room one of the cubicles forms a little photographic studio, with stand, camera, arc lamp, and roll-up background.

Mr. C. E. S. Phillips, F.R.S.Edin., an ex-president of the Roentgen Society, who has carried out a great deal of original work upon the measurement of radium, has been appointed honorary physicist, and two laboratories are under his direction. One of these, a small room in the Electrical Institute itself, is given over to some investigations he is making upon radium emanation. In addition to other appliances for collecting and accumulating the substances given off by radium, it contains a double pump of special design, which, with the 25 mg. of radium bromide that it holds in solution, ensures a constant delivery of emanation for experimental as well as for medical purposes. The other laboratory, which is wisely housed in a different building so as to be outside the sphere of influence of this store of radium, contains electroscopes and other measuring instruments of great sensitivity, as well as an optical bench and, in another dark room adjoining, a good photomicrographic outfit. The whole of this work is still in its preliminary stages, and much may be hoped from the attempt on the side of physics to perfect the technique of the radium and *x*-ray treatment of cancer. Mr. T. A. Pole has been the architect of the new building.

LONDON COUNTY COUNCIL.

Inauguration of the New Arrangements for Medical Inspection and Treatment.

The revised arrangements for the medical inspection and treatment of elementary school children in London—as to which details have appeared in the issues of the BRITISH MEDICAL JOURNAL of May 25th, 1912, p. 1212; June 22nd, p. 1452; July 22nd, p. 206, etc.—came into force on Tuesday last, October 1st. London is now divided for school medical purposes, and particularly for work connected with medical inspection, into four districts, each under the control of an assistant medical officer, who is responsible to the medical officer for the county, Dr. W. H. Hamer. In place of eighty quarter-time school doctors, there are now twenty-four whole-time officers, five having been appointed on a permanent basis and nineteen under yearly agreements. There is considerable divergence of opinion among members of the Council as to the relative merits of whole-time and part-time service in this work, some being of opinion that routine duties such as are required of the medical men undertaking the inspection of large numbers of children tend to become mechanically performed, and that it is desirable that the officer should devote the greater part of his time to work of a more general character. Others urge that the duties are of such a nature that medical men may usefully specialise in this branch, taking it up as their life's career, and looking for promotion in the Council's service and in the education service throughout the country. It is also claimed that a whole-time staff can be more efficiently organized than a part-time one.

The Board of Education having consented to recognize a system of medical inspection and treatment which makes use of hospitals and similar voluntary institutions, and of treatment centres established by local committees of medical practitioners, the Council has extended this method of dealing with the medical needs of the school children, incorporating various modifications demanded by the Board. In the case of hospitals, the system of "following up" in the homes of those treated—adopted with success at the London Hospital—is to be made the rule where hospital provision exists. The medical treatment centres have been subjected to criticism by the Board of Education on the grounds that they are not sufficiently under the control of the Council, and that they are not available for inspection and re-examination, nor for the treatment of minor ailments. In several new schemes for providing treatment at local centres which have been approved by the Council these points have been dealt with. While the centres will be provided and maintained by the local committees of practitioners, the Council will be responsible for the

administrative control, and the centre will be available for inspection and re-examination. Under the head of minor ailments will be included discharging ears, external eye diseases—for example, blepharitis and conjunctivitis—skin diseases such as impetigo and sores, and such other conditions as require the daily services of a nurse. The new treatment centres which came into being on October 1st are at Fulham, Hackney, Islington, Peckham, St. Pancras, Poplar, while agreements have also been entered into with the authorities of the Home for Sick Children, Lewisham, and of the St. George's Dispensary, Blackfriars. As in earlier agreements, payment will be provided for at the rate of £50 a year for each medical practitioner or anaesthetist working one half day a week, and a capitation payment of 2s. for ear, eye, nose and throat cases,
with an additional capitation payment of 4d. a case for minor ailments. There are still only two or three centres in the county of London for the provision of dental treatment.

MANCHESTER AND DISTRICT.

The Chief Tuberculosis Officer for Manchester.

Early in September, by the instruction of the Town Hall Committee of the Manchester Town Council, the Town Clerk wrote to the Local Government Board drawing attention to the Board's order of July 26th on the subject of the domiciliary treatment of tuberculosis, and asking "under what provision, if any, of the National Insurance Act, 1911, or otherwise, the Board had acted in nominating the medical officer of health of this city, being a county borough, as consulting officer of a dispensary under the National Insurance Act, without first obtaining the consent of the Town Council, by whom he is appointed and paid." The Town Clerk observed that by Section 60 (2) of the Act the medical officer of health could only be required to give advice and assistance to the Insurance Committee with the consent of the Town Council by whom he is appointed, and as the administration of sanatorium benefit devolves upon insurance committees, "any services which the medical officer of health may be required to render with respect to tuberculosis would appear to have reference to the duties of the insurance committees." To this letter the Local Government Board replied that the letter of the Town Clerk was written under a misapprehension, that the expression "consulting officer" in the Board's order was defined to mean a consulting officer to a dispensary approved by the Board under the Insurance Act for the treatment of tuberculosis, or, "until such officer had been appointed, the medical officer of health, or such other medical practitioner as the Board may, on the application of the Insurance Committee, from time to time approve;" also that the Order did not nominate the medical officer of health as consulting officer, but that it was entirely within the discretion of the Town Council whether their medical officer of health should act, until consulting officers of approved dispensaries have been appointed, and finally, that if the Town Council withheld its consent to the medical officer of health acting for the time being as consulting officer, it was competent for the Insurance Committee to apply for the Board's approval of some other medical practitioner acting as consulting officer. On receipt of this letter from the Board the Town Hall Committee referred the matter to a special subcommittee to consider the whole question of Dr. Niven's duties, but resolved in the meantime to withhold its consent to the appointment of the medical officer of health as consulting officer of a dispensary of the Manchester Insurance Committee. On the other hand, the Sanitary Committee of the Town Council has resolved that, in its opinion, it is desirable that the Town Council should consent to the medical officer of health becoming temporary consulting officer within the meaning of the Order of the Local Government Board. The chairman of the Town Hall Committee disclaims any desire to place obstacles in the way of the Insurance Committee, but, having regard to the enormous amount of work which the medical officer of health has already to do, it is thought necessary to know whether he would be able to discharge the extra duties thrown on him by the appointment in question. At the monthly meeting of the Town Council on October 2nd a motion was made that the approval of the Council should be withheld pending the meeting of the Sanitary Committee on October 3rd, when it was arranged that a deputation should be received from the Joint Committee of the Divisions of the British Medical Association. This met with much opposition, and it was pointed out that if Dr. Niven were not appointed, the Insurance Committee would exercise its right to appoint some other medical officer, though no one could serve the ratepayers so well. Eventually it was agreed that Dr. Niven should be allowed to act as temporary consulting officer for the next three months.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

Presentation to Dr. J. T. Creery, of Coleraine.

A short time ago Dr. Creery, of Coleraine, met with a motor accident, fortunately not attended with fatal consequences. Dr. Creery has given for thirty years zealous and efficient service in the interests of the community as dispensary medical officer and medical officer of health, and his many friends and patients showed their high appreciation of his services and gladness at his recovery and return to work by presenting an address to him on September 25th. The address, which was accompanied by a very handsome gold watch and a substantial cheque, showed forth the kindly relations and mutual devotion that existed between the doctor and his patients and friends. The profession in the North of Ireland join in their best wishes and congratulations to one of their best known and honoured colleagues.

South Dublin Union and Consumptives.

At the last meeting of the South Dublin Rural District Council one of the members called attention to the existence of very bad cases of tuberculosis in a number of cottages in the district. He mentioned one in which five or six people were living with a child that was actually dying of consumption. Some discussion arose as to whether the cases were too advanced for reception at Crooksling. A councillor said that at Crooksling all stages except the very advanced would be received, but there were 3,000 consumptives in the county, and he did not know how provision was to be made for all. At the present time it was in contemplation to erect additional buildings at Crooksling to accommodate 300 more patients. The following resolution was unanimously adopted:

> That in all cases of pulmonary tuberculosis the medical officers of health be instructed in the first instance to send such patients to a sanatorium by means of the machinery provided by the National Health Insurance Act and the Committees created thereby, any case to which the benefits of the National Health Insurance Act cannot be applied to be sent to the Crooksling Sanatorium under the provisions of the Dublin Joint Hospitals Order.

Tuberculosis Scheme.

The South Tipperary County Council, at its last meeting, made the following appointments under the county tuberculosis scheme: Dr. John Quirke, Ballyfoley, Cashel, was elected medical superintendent at a salary of £400 and £52 travelling allowance; Miss Violet Long, Balrothery Hospital, was elected matron at £100 a year, including rations; and Miss Kelly, County Infirmary, was elected travelling nurse at £100 a year, including travelling expenses.

India.

[FROM OUR SPECIAL CORRESPONDENTS.]

Report of Sanitary Commissioner.

The report for the year 1910, recently issued, has been compiled by Surgeon-General Sir C. P. Lukis, Director-General of the Indian Medical Service. It is unprecedentedly condensed—shorter by 47 pages than the report for the year 1909. The sections have been rearranged and a new section has been added, giving information regarding hospitals and dispensaries, lunatic asylums, and medical colleges and schools. This is an interesting and

welcome innovation. The subjects of report are, in other respects, the same as usual; but they are dealt with in a more summary fashion, and references to scientific work are less extended. This is probably due to the circumstance that researches regarding tropical diseases, their pathology, etiology, and prevention, are now issued and circulated in special publications, of which the periodical *Paludism* and the "Scientific Memoirs," issued under the authority of the Government of India, by the Sanitary Commissioner with the Government of India are the principal. The statistical statements and tables compiled by Major S. P. James, I.M.S., are as voluminous as hitherto, and have been prepared according to previous methods.

General Character of the Year.

Following a healthy year, the incidents and statistics of which were summarized in the BRITISH MEDICAL JOURNAL (vol. i, 1911, p. 1343), the conditions of the year 1910 were still more conducive to public health and the records of sickness and mortality still more satisfactory. The rainfall, which is the most important climatic factor in India, was abundant, being 2.8 inches, or 6 per cent. above the average. The early months were comparatively dry; but the monsoon rains were generous and well distributed. A cyclonic storm gave late and heavy rain in November in the Central Provinces, Central India, and the East of the United Provinces. Crops were everywhere abundant, food supplies ample and cheap, and the year on the whole is pronounced to be "one of good health and prosperity." Peace and order prevailed throughout the Empire.

Vital Statistics of the General Population.

The calculation of ratios has been made on the census of 1901; but the enumeration of 1911 has disclosed considerable changes, which affect the rates and will have to be taken into account in future reports. The birth-rate for the whole of India was 39.52 per 1,000 against 36.65 in 1908 and 37.61 in the previous five years. There was a rise in all provinces except Eastern Bengal and Assam and Coorg. The general death-rate was 33.20 against 30.91 and 35.40. There was a rise in all provinces except Eastern Bengal and Assam, Burma, and Ajmere-Merwara, the highest being 50.08 in the last and the lowest, 24.7, in Madras. Birth-rates exceeded death-rates in all provinces except Coorg and Ajmere-Merwara. The cause of increased mortality was mostly the greater prevalence of cholera and plague. Men died in higher proportion than females. The death-rate of male infants, calculated on the births of the year, was 217.2 per mille, and female 201.17, against 260.72 and 226.57 in 1909. Infant mortality in large towns was very high, Calcutta returning 273, Bombay 414, and Madras 294.1.

Prevalent Diseases.

For the whole of British India the aggregate returns show, as compared with 1909, a rise in the mortality due to cholera, plague, bowel complaints, respiratory diseases, and "all other causes," and a decline in fevers and small-pox. Fevers, mostly malarial, account for 58 per cent. of the total mortality, cholera for 6, plague for 5, bowel complaints and respiratory diseases each for 3, small-pox for 1, and all other causes for 24; the corresponding rates for 1909 being 64, 3, 2, 3, 2, 1.5, and 24.5. The conditions prevailing in different provinces present considerable variation affecting public health for better or worse. In the present report the provincial prevalence of disease has been with advantage described in relation to the climatic and other characters of each province, and its vital statistics. The abatement of fever mortality, which fell from 19.82 per 1,000 to 19.17, was most marked in the United Provinces and Punjab; Bengal, Eastern Assam, the North-West Frontier Provinces, and Burma showing a slight fall. There was a marked rise in the Central Provinces and Coorg, and a slighter advance in Madras and Bombay. Malaria inquiry is being pushed vigorously through the agency of a central committee and provincial committees, and by means of special investigations by competent men. Classes for the instruction of officers and subordinates are held at Amritsar, and efforts are being made to instruct the public as regards the methods of prevention indicated by existing knowledge and warranted by experience. The sale and distribution of quinine is being actively promoted, and antimalarial measures have been carried out in many places. The report contains full information on this subject. The increased prevalence of cholera was most marked in the valleys of the Ganges and Brahmaputra, and the disease spread to Upper India as far as the North-West Frontier. In other parts of India there was a decreased mortality.

Plague, which began to increase towards the close of 1909, caused thrice as many deaths as in the preceding year, the rate rising from 0.64 to 1.83. There was an increase in every province except Upper Burma; it was greatest in the Punjab, the United Provinces, and Bengal. Segregation, evacuation of houses, disinfection, rat destruction, and inoculation are resorted to, but evidently with limited success; 625,690 doses of antiplague vaccine were issued, an increase of 32,526 doses. Special investigations are being carried out under the direction of the Advisory Committee. There was an increase of deaths from bowel complaints and chest diseases, the cause of which is not explained. The latter are more fatal in the Punjab, Central Provinces, and Bombay than in other provinces, but the figures are very doubtful. The decreased mortality from small-pox was general, the rate falling from 0.45 to 0.23. The Ferazi Mohammedans of the town of Nawabganj in Eastern Bengal resist vaccination, and the death-rate from small-pox in that place during the year was 21.17 per 1,000.

The Gaols.

Crime in India is largely governed by the material condition of the people. Peace and plenty make for a decrease, and the opposites for an increase, of crime. The prison population in 1910 accordingly fell from 99,104 to 98,032. There was, therefore, less overcrowding in the gaols, and this caused a reduced mortality from dysentery, tubercle, and pneumonia, which together account for 47 per cent. of total deaths. Sickness and mortality in gaols depend greatly on the physical condition of the prisoners admitted. In this year favourable outside conditions, in which the gaols participated, promoted the health of the inmates. The sickness-rates fell from 618 (admissions) and 28 (constant sick) to 549 and 25 per 1,000, and the death-rate from 22.85 to 19.28. The Central Provinces, and Eastern Bengal and Assam had the highest rates of 36.52 and 34.16, and Bombay and Burma the lowest of 15.25 and 11.98. The admission-rate for malaria fell from 172 to 134, and the death-rate from 1.19 to 0.90. The decrease is in some measure due to more accurate diagnosis and a healthier year, but is largely owing to quinine prophylaxis and other preventive measures. The admission-rate from dysentery fell from 70 to 57, and the death-rate from 4.20 to 3.46. This disease is the scourge of gaols, and is undergoing special inquiry. Tubercle admissions declined from 9.9 to 8.7, and deaths from 3.72 to 3.41 per 1,000. Many, probably most, of the cases arise from infection, and the avoidance of crowding and provision of tubercle wards and gaols are being attended to. There was a fall in admissions from pneumonia from 14.3 to 11.0, and of deaths from 3.60 to 2.57. Enteric fever caused 87 admissions and 23 deaths, cholera 42 and 23, small-pox 27 and 3, and plague 3 cases, all fatal. The health of the Andamans Penal Settlement continues to be very bad. The admission-rate was 1,566, and the death-rate 40.01. Malaria, dysentery, and tubercle were the main causes. Major Christophers, I.M.S., has been deputed to investigate the causes of excessive sickness and mortality.

European Troops.

The strength of the British army in India was 72,491, of which an average of 13,183 occupied hill stations, and 3,942 hill convalescent dépôts and sanatoriums, and 2,158 were marching. The rates of sickness and mortality were the lowest on record, the admission-rate being 576.5, the constantly-sick-rate 31.0, and the death-rate 4.66 per 1,000, against 716.9, 40.3, and 6.25 in 1909, and 840.6, 50.6, and 9.85 in the quinquennium 1904–8. The invaliding-rate was 7.77 against 9.07 and 25.23. The sickness and death-rates were, as usual, higher in the northern than the southern army. There was a considerable reduction in the sickness and mortality due to malaria. This is attributable to a healthier year, more accurate diagnosis, and more stringent preventive measures which are resorted to with increased activity and care. Fewer cases were registered under the heading of "Pyrexia of uncertain origin." Sandfly fever, also denominated phlebotomus fever and

pappataci fever, appears for the first time in the returns, 512 cases being diagnosed as such in ten stations. Uncertainty evidently exists regarding the recognition of this form of pyrexia, and the full information given in this report regarding symptomatology, pathology, bacteriology, causation, and prevention will be of great service to medical officers in the future. The decrease of cases and deaths due to enteric fever continues, the admissions being 355 and deaths 46. Preventive measures, including inoculation, are responsible for this satisfactory result. Interesting details are given regarding recent observations concerning the pathology and epidemiology of both typhoid and paratyphoid fevers, in India and elsewhere. The case-mortality of enteric fever was also lower. Cholera caused 9 admissions and 7 deaths, small-pox 3 cases, plague 2 cases and 1 death. There was a slight rise in tubercle of the lungs, but a decrease in pneumonia and dysentery. The mortality caused by hepatic abscess was 35 against 34 in 1909. The decrease in recent years is coincident with a reduction in alcoholism. The decline of venereal disease continues. The statistics of officers, women, and children were more favourable than in the preceding year.

Native Troops.

The strength of the native army was 131,627—353 less than in 1909. Of this number 23,650 were stationed in the hills, 2,332 in China, 1,320 in Aden, Perim, and the Persian Gulf stations, 749 at Singapore, 738 at Colombo, 337 on service in Somaliland, and 11,331 marching. The admission and death rates were the lowest on record, the latter being 4.89, or, including absentees, 7.12, exceeding for the first time the death-rate of the European army. The statistics of troops employed outside of India were favourable. The 76th Punjabis at Tientsin in North China suffered from tuberculosis, attributed to overcrowded and badly ventilated barracks. There was a decided fall in admissions and deaths from malaria. In some stations Indian soldiers are beginning to buy and to use mosquito curtains. Pyrexia of uncertain origin accounts for 3,742 admissions and 24 deaths. The formula includes a variety of pyrexial complaints demanding investigation and discrimination; 508 cases of sandfly fever were returned, mostly from five stations on the North-Western Frontier. There were 9 admissions from kala-azar, 23 from Malta fever, 2 from relapsing fever, and 31 with 22 deaths from plague. Cholera caused 21 admissions and 12 deaths against 26 and 18 in 1909, and small-pox 22 and 1 against 43 and 8. There was a decreased incidence of scurvy and a lowering of deaths from tubercle, the rates being 2.4 and 0.15 against 2.3 and 0.26 in 1909. Goorkhas, as usual, contributed mainly to the mortality, but their rates show a decided reduction. The Corps of Guides at Fort Abazai suffered severely, the accommodation being bad, and the ventilation and lighting very insufficient. There were 329 admissions and 58 deaths from enteric fever against 284 and 57 in 1909. The discontinuance of the entry, "remittent fever," has caused an increase of cases and deaths under this head. There was a decrease in pneumonia and a reduction in dysentery; there was also a decrease in venereal disease. There were 18 admissions from beri-beri, 13 of them in the 83rd Infantry at St. Thomas's Mount, attributed to bad rice.

Hospitals and Dispensaries.

The number of institutions maintained in whole or in part by public funds was 2,670, an increase of 32. In these were treated over 28 million of patients, and over 1 million of operations were performed. In addition, statistics are given of 451 "State special," 360 railway, and 672 private (non-aided) hospitals and dispensaries, in which 6,751,231 patients were treated and 256,923 operations performed. Indian subscriptions contribute from 10 to 1½ per cent. of income. The latter figure belongs to Bombay, in which presidency independent (non-aided) institutions are more numerous than in other parts of India. The sale and distribution of quinine is conducted in many dispensaries. The training of nurses and midwives is also a useful work, which might be extended. Many in-patients are dieted at their own expense, and in some provinces paying patients are admitted. The proportion of women and children treated is on the increase. The pay of subassistant surgeons and compounders has been raised in several provinces, and a better stamp of men thus obtained. In Eastern Bengal female subassistant surgeons and midwives are employed in female dispensaries. A new hospital is being built at Lucknow in connexion with the new medical college.

Lunatic Asylums.

The aggregate of lunatics in confinement in asylums, the number of which is not stated, was 7,405, an increase of 27 on 1909. This total represents a very small fraction of the population of British India. Males constitute 79 per cent., and criminal lunatics 27 per cent. of the asylum population. The recoveries were 9.1 and the deaths 7.9 per cent. of the mean residents. The causes of mortality are not stated, but dysentery and tubercle are probably conspicuous items. Overcrowding existed in some cases. A tubercle ward has been opened at Bareilly, and a similar provision—evidently much needed—is under consideration elsewhere. The prevalence of bowel complaints is under inquiry in the Punjab. Excessive mortality in the Nagpur Asylum is attributed to ankylostomiasis and other affections caused by worms. Difficulties are experienced in some provinces in obtaining the services of suitable attendants. Hospitals for females were completed at Calicut and Vizagapatam.

Medical Colleges and Schools.

There are four medical colleges and fourteen medical schools in British India. The report sets forth the number of students under instruction in each, the number who obtained qualifications, and some financial details. These institutions educate men and women for public and private employment in various capacities. Nurses and "dhais" (native midwives) are also trained in some schools. Hostels and laboratories are being added to the existing buildings in Madras and Bombay. The new medical college at Lucknow was opened for junior classes in October, 1911. The *x*-ray institute of India is doing good work in diagnosis and treatment, and two classes of instruction were held during the year, at which 37 officers and subordinates received practical training.

Vaccination.

The number of vaccinations, and more especially of re-vaccinations, performed in India in any year depend greatly on the prevalence of small-pox. It is therefore satisfactory to find that in 1910–11, while small-pox was comparatively in abeyance, primary vaccination underwent an increase of 190,367. Revaccination, as might be anticipated, showed a decrease of 199,759. There was thus a shortage of 9,392 on the whole. The proportion of the population successfully vaccinated was 35.06 per mille against 35.55 in 1909-10; and taking the birth-rate at 40 per 1,000, the percentage of infants protected is calculated at 46.44 against 44.20 in the preceding year. The proportions vary considerably in different provinces. Opposition from certain communities, reduced staff, and short supply of lymph are assigned as the chief causes of defect. The cost of vaccination also varies considerably—from 9 annas 3 pice per successful operation in Bombay to 1 anna and 5 pice in Bengal. Dispensary vaccination is declining, on account of the employment of a special staff, which is a more effective method. Arrangements for the supply of prepared lymph are being improved, and the system of cold storage has been introduced in Calcutta with advantage.

Sanitary Administration and Work.

The information given in this section of the report is condensed from the reports of provincial sanitary boards, several of which omit to supply details regarding the transaction of municipal and district bodies. The particulars cited indicate that a large proportion of their revenues are devoted to sanitary purposes. Increased effort is being applied to the execution of large undertakings for water supply and drainage, the provincial governments aiding these projects by grants and by sanctioning loans. The Sanitary Board of the United Provinces, three members of which are unofficial, is applying funds placed at its disposal by Government to the provision of model houses for the poor, constructed on sanitary principles, to rural sanitation, inquiries into the causes of malaria, and the free distribution of quinine. Incinerators for the destruction of refuse have been erected

in several towns. Altogether the record of sanitary work throughout India indicates commendable advance.

Miscellaneous.

Twenty-five ships carried 21,056 pilgrims to Mecca; 87 deaths occurred on the voyage and 121 at Cameran during seven days' pilgrimage. In the Hedjaz, city of Mecca, and Jeddah sickness was severe and mortality, caused by plague, fever, dysentery, diarrhoea, and respiratory diseases, very high. Twenty-one ships carried 16,900 return-pilgrims, among whom 363 deaths took place. Small-pox broke out on fourteen of the ships. Summaries of work done in the Central Research Institute, Kasauli, the Bombay Bacteriological Institute, the King Institute of Preventive Medicine, the Pasteur Institutes at Kasauli and Conoor are supplied, and *précis* of researches regarding plague, leprosy, and malaria indicate a large amount of useful scientific investigation. A list of scientific publications by the Sanitary Department brings this most admirable report to a close.

Ceylon.

REPORT OF THE PRINCIPAL MEDICAL OFFICER.

THE report of the Principal Medical Officer and Inspector-General of Hospitals for 1910–11 states that the population enumerated at the last census (March, 1911) was 4,105,535, of whom 7,625 were Europeans. Compared with the population at the census of 1901, there was an increase of 15.1 per cent.

The birth-rate was 39.6 per 1,000, and the death-rate 28.0 per 1,000. Compared with 1909, the birth-rate showed an increase of 2.9 per 1,000, and the death-rate a decrease of 2.3 per 1,000. The infant mortality in the thirty-one principal towns for 1910 was equal to a rate of 241.7 per 1,000 births, as against 257.7 in 1909.

The total number of persons treated for malaria in hospitals and dispensaries was 877,841, an increase of 72,371 on the number treated in 1909, which may be accounted for by the occurrence of an unusually severe outbreak in parts of the Western and Central Provinces after the break of the south-west monsoon of 1911 following a prolonged drought. The work in connexion with the prevention of mosquito-borne diseases in Ceylon during the year 1910 was on the lines followed in previous years—namely, general improvement in the sanitation of towns, the education of the public by lectures and pamphlets, and the free distribution of quinine.

The total number of cases of cholera treated during the year was 410, with 266 deaths. In nearly every instance the original source of infection could be traced to South India. Every province in Ceylon, excepting the North-Central, returned cases of small-pox, and in nearly every case the original source of infection was traced to Southern India; 209,160 primary and 42,340 revaccinations were performed. Among the 816 cases of enteric fever treated in the hospitals of the island the mortality was 20.9 per cent.

In the Government medical institutions 628 cases of leprosy were treated, with a mortality-rate of 63. The present accommodation for lepers is inadequate, but the question of a leper colony in the Eastern Province is still under consideration. There are many lepers at large.

The deaths from ankylostomiasis numbered 1,592, a slight increase as compared with 1909. A committee appointed to consider the prevention and treatment of this disease recommended that all superintendents of estates should treat new arrivals with beta-naphthol, followed by tonics. Where it is known that ankylostomiasis already prevails on estates, superintendents should treat the whole labour force in convenient batches in a similar manner. It also recommended superintendents to give special attention to latrines, drains, to the burning of all rubbish, and to the water supply. A draft enactment is under consideration, but many planters have improved the conditions under which their labour force live, and have carried out sanitary improvements and medical treatment with excellent results.

The cases of yaws treated in the various medical institutions numbered 4,777, with 18 deaths. The salvarsan treatment has been used by Dr. Castellani in a fair number of cases with satisfactory results, and a medical officer with special knowledge of the treatment has been stationed at Anuradhapura to treat all suitable cases in the hospital there.

Phthisis accounted for 3,917 deaths in 1910, according to the Registrar-General's returns. The education of the public has been attempted by means of illustrated handbills with letterpress in the vernaculars, and the principal civil medical officer has given popular lectures on the subject, illustrated by lantern views, at many towns.

Hospitals, Dispensaries, and Asylums.

There were 73 hospitals, and the lunatic and leper asylums, 408 Government dispensaries, and 250 estate dispensaries working during 1910. The nursing in these hospitals is undertaken by fully qualified European trained nurses, by religious sisters, and locally trained Ceylonese young women. Two nursing schools for the training of local pupil nurses exist at the Lady Havelock Hospital and at the Kandy Hospital. The training course is two years, and at the end of that time certificates are given to those who pass the examination. The number of patients treated inside the hospitals was 118,024, with a death-rate per cent. of 10.88 of the hospital population. The out-patients at the dispensaries numbered 218,645, who paid 3,183,567 visits.

Medical College and Bacteriological Institute.

Full advantage is taken of this institute; over 3,000 specimens were sent for bacteriological examination. There were 243 students in attendance at the Medical College at the end of June, 1911, of whom 161 were registered medical students and 82 apothecary students. Thirteen students qualified in medicine and surgery; 19 apothecary students passed out.

Medical Department.

The principal civil medical officer, Sir Allen Perry, has a large staff to work his department—164 medical practitioners, 264 apothecaries, and 140 inspectors of vaccination and vaccinators. Under the guidance of the principal civil medical officer the work of the Government medical service is efficiently and thoroughly done, and great improvements have been effected, especially in connexion with the sanitation of the island.

The Opium Question.

Appended to the report is a memorandum on the opium question. This question was referred to a committee "to inquire into and report on the importation, sale, and consumption of opium in Ceylon, and to state what changes were desirable in the ordinances and regulations affecting the importation and sale of the drug." As the opium question is one which very materially affects the native community in the East, the recommendations of this committee are given:

(*a*) That the present system of renting and licensing be abandoned.

(*b*) That all opium shops be closed on the expiration of existing licenses.

(*c*) That the importation, distribution, and sale of the crude drug be made a Government monopoly.

(*d*) That for every opium shop closed the nearest Government dispensary be made available for the distribution of the drug to all habitual adult users of the same who may come forward to register their names for a certain quantity to be periodically given out and paid for in cash, and that suitable remuneration be given to the dispensers for the extra work and responsibility thus cast upon them.

(*e*) That the use of the drug, except for medical purposes, should be entirely prohibited after a definite period.

(*f*) That a system of careful inspection be introduced by the appointment of special officers under the direction of the principal civil medical officer.

This was followed by the appointment of a Commission

to inquire into and report on the question of introducing a system of registration of vedaralas who deal in opium in this country; and, in the event of their being registered, whether the opium supplied should be pure or mixed with aloes or some other drug.

This Commission made certain recommendations, and these, along with those of the committee, resulted in an enactment being passed, cited as the Opium Ordinance, 1910, in which opium was made a Government monopoly, with Government dépôts in various parts of the island for the distribution of the drug to registered consumers

and registered vedaralas. Fifty-eight opium dépôts were established and equipped for the sale of opium by October 1st, 1910, since which date the work has gone along smoothly. The following figures may be interesting: During the year ending September 30th, 1911, 60,736,559 grains of eating opium and 12,206,574 grains of smoking opium were sold, bringing in a revenue to the Government of over Rs.579,376.

South Africa.

Report of the Medical Officer of Health of Johannesburg.

The report of the Public Health Department of Johannesburg for the two years ending June 30th, 1911, has recently been issued. Besides the report of the medical officer of health (Dr. Charles Porter) there is a report on the health of the natives employed by the Council by Dr. Stock, one on the municipal census of Johannesburg by Dr. Maynard, and one on mortality amongst natives employed on mines and works, also by Dr. Maynard.

According to the municipal census of October, 1910, there were in Johannesburg 220,304 persons; of this number 111,857 were Europeans. The birth-rate among Europeans was 35.7, with a death-rate of 14.4 Dealing with the chief factors of mortality amongst whites, the most notable feature is the marked and continued decline in the mortality from enteric fever, showing a decrease of 40 per cent.; there has also been a steady decline in the number of cases, 548 cases being reported in the two years under review, with 46 deaths, as against 814 cases with 68 deaths in the previous two years. Deaths from diarrhoeal diseases were less by 11 per cent.; there was, however, a severe and widespread prevalence of measles, causing 80 deaths, as against 38 in the previous two years. The infantile mortality was 114 per 1,000 births, as against 128 in the previous two years. The mortality among coloured infants was 361 per 1,000.

Some interesting figures are given with regard to tuberculosis. The death-rate amongst whites in 1909–10 was 0.90 per 1,000 persons living, and in 1910–11 0.97, whilst in the natives it was 3.81 and 4.74 for the same periods. During the four years 1907–11 inquiry had been made in regard to each death from tuberculosis amongst whites, with a view to obtaining some notion as to (*a*) the proportion of fatal cases which may be regarded as "imported," that is to say, in which the infection was contracted before the deceased person came to South Africa; (*b*) the proportion in which the disease was acquired during residence in South Africa; and (*c*) the effect of occupation. The inquiry showed that 88 of the deaths occurred in persons who were infected before arrival in South Africa, and 160 after arrival. The percentage of fatal cases which may be regarded as imported is about 21, and that in which the disease was contracted in South Africa at 72; 158 deaths, or 37.7 per cent. of the total mortality from tuberculosis, occurred amongst miners employed underground, over one-half being machine drillers. There were 845 deaths from tuberculosis amongst South African coloured persons during 1909–11. The great majority of the males were mine boys (718) and labourers (92). The circumstances which led up to the voluntary notification of tuberculosis are stated, and the procedure adopted in regard to notified cases is recorded. The measures recommended for dealing with the disease are (1) the education of consumptive patients; (2) disinfection of infected premises; (3) enforcement of general sanitary conditions and better housing, especially as regards coloured persons; and (4) regulation of tuberculous immigration.

The mortality rate for cancer in Europeans in Johannesburg is 8.28 per 1,000.

Regarding miner's phthisis, reference is made to the reports of the Mining Regulations and the Miners' Phthisis Commissions. Practically all the commissions' recommendations, including those regarding dust prevention, mine ventilation and air standards, scavenging, water supply, native diet, housing, first aid, and ambulance, were promulgated as regulations in the *Union Gazette Extraordinary* of November 21st, 1911; it is believed if these regulations are enforced, they will place the hygiene of mining in South Africa on a very satisfactory footing.

The water of Johannesburg is obtained from two sources, (1) Rand Water Board, and (2) boreholes, shallow wells, and rain-water tanks. The water from the western series of wells at Zwaartkopjes has been satisfactory, but the bacterial content of the water from the southern section has varied considerably, and it was decided to try the effect of treating the water with a solution of chlorinated lime. This method appears, on the whole, to give satisfactory results.

Other special subjects are dealt with in the report, such as aërated water and ice factories, sewerage, sewage disposal and mine sanitation. Slum property is also dealt with, and the medical officer of health hopes for legislation on the lines of the English Town Planning Act.

The report is a very full and exhaustive one, and shows that much important work is being done in connexion with the public health of Johannesburg.

Adelaide.

Report of the Medical Officer of Health.

The report on the public health of the city of Adelaide for the year ending September 30th, 1911, has recently been issued. The population estimated by the Registrar-General on January 1st, 1911, was 40,605. The births during the year numbered 1,087, giving a birth-rate of 26.77, much the same as that of the previous year; it is satisfactory to note that since 1906 the birth-rate has progressively increased. The death-rate is 25.98; this death-rate includes all deaths registered within the city bounds, and if the deaths in public institutions (as specified by the Registrar-General) are excluded, of persons not usually resident in the city, the death-rate becomes 17.16. The infantile mortality-rate is 98 per 1,000 births. The infant mortality is the same as in the preceding two years. This figure is the lowest on record during the preceding ten years. Among the diseases tabulated the number of deaths from diphtheria, tuberculosis (other than phthisis), cancer, respiratory and circulatory diseases respectively, is above the average of the preceding ten years, while the number from typhoid fever, diarrhoeal diseases, and pulmonary tuberculosis is below the average; 1,125 cases of infectious disease were reported during the year—this was exclusive of cases contracted outside of or brought into the city for treatment. Measles accounted for 737 cases, and diphtheria notifications numbered 194; 152 cases of pulmonary tuberculosis were reported during the year, of which 92 were imported for treatment or came to the city suffering from the disease; this leaves 60 of apparently local origin.

Some progress has been made during the year in the crusade against phthisis. The Metropolitan Boards of Health have contributed £350 per annum towards the funds of the James Bunn Trust, which in return provided at least seven beds at Kalyra for the treatment of poor patients in the early stages of the disease. In addition to this there are sanatoriums for patients able to pay, and the Government has provided for the isolation and treatment of poor patients in the advanced stages of the disease. As far as the city is concerned, the education and supervision of consumptive patients are being carried out by the city trained nurses, and every house is disinfected after removal or death of a patient.

It may be noted that the mean temperature (of maximum and minimum) during the year was 62.0° F., with a mean maximum of 100.5° F. and mean minimum of 34.9°, while there was a total rainfall of 17.97 in., with 137 wet days.

The Michaelmas term of lectures and demonstrations at the Brompton Hospital for Consumption will commence on Wednesday, October 16th, at 4.30 p.m., when Dr. Habershon will give a demonstration of cases. Further information can be obtained on application to the Dean of the Hospital.

The fourth annual meeting of the Indian Association of Negro Physicians, Dentists, and Pharmacists was (we learn from the *Journal of the American Medical Association*) held at Indianapolis on September 5th. Dr. A. H. Wilson was elected president.

Correspondence.

THE REVISION OF THE *MEDICAL REGISTER*.

Sir,—I shall be greatly obliged for your help in reminding the members of the medical profession of the importance of keeping an address in the *Medical Register* which will form a safe channel of communication. The onus of notifying changes lies upon the practitioners themselves, and, though every possible effort is made to remind them of this, and to trace them when touch has been lost, it is often impossible to get into communication with them. Representations have been made to the Registrar-General, to the Board of Trade and to other Government departments, with the result that the *Register* is officially consulted far more often than it used to be. This affords protection to the public and to the profession alike, but any practitioner who has allowed his name to lapse from the *Register* may find himself temporarily much inconvenienced. I shall be glad to hear from any one who has doubts as to the accuracy of his address, and all communications will be acknowledged.

I also wish to remind practitioners that the *Medical Register* is the only official publication, and that the entry of name therein alone confers any legal privileges; it should not be confused with any of the directories which issue circulars every year.—I am, etc.,

Norman C. King,
Registrar.

General Medical Council Office,
299, Oxford Street, London, W.,
Sept. 25th.

THE ORGANIZATION OF THE CAMPAIGN AGAINST TUBERCULOSIS.

Sir,—Dr. Lauriston E. Shaw's letter under this heading will certainly be welcomed with a feeling of relief throughout the medical profession. A stereotyped method of treatment of phthisis is about to be inaugurated, and all members who administer the Act will naturally be expected to act as if they gave this particular kind of treatment their unqualified approval.

Recent letters which have appeared in the British Medical Journal show what a wide difference of opinion prevails with regard to tuberculin treatment, and it is to be hoped that all methods of treatment will be discussed and their effects noted.

General practitioners, of whom three-quarters of the profession consist, see tuberculosis in its earliest stages, and this class of case when successfully treated, as it must be in thousands of cases, is inevitably ignored and cannot be used in the compilation of statistics.

All do not use tuberculin, therefore the opinions of those who have found other methods of treatment successful would be of the utmost value now.

A specialist in any particular line of treatment is enthusiastic and perhaps unconsciously biassed; a general practitioner, who has to justify his treatment by success or soon lose his patient, is at the least equipped with an open mind.

With these differences of opinion as to tuberculin, supplemented by the danger of anaphylaxis, and further confirmed by patients who had unsuccessfully undergone sanatorium treatment, it was a relief to learn from the Journal of the existence of soamin. My personal experience justifies everything said in its favour, and I have not found anything pointing to intolerance in any case in which I have used it. It has been successful in cases both with and without haemoptysis, but its most astonishing quality is the speediness with which the patient experiences a change for the better. Appetite generally returns within twenty-four hours, often in five or six; cough and sweating are quickly checked, and in every case the patient has expressed himself as quickly feeling better.

With absolute facts like these staring me in the face, I feel I shall be in an equivocal position under the Act. In every case of phthisis, until tuberculin is ordered by the chief tuberculosis officer of the district, I shall be conscientiously compelled to continue my present line of treatment, and shall regret the risks of anaphylaxis, the appearance of which no one can foretell, if tuberculin should be ordered by my official superior, unless of course he is justified by failure on my part. I hope this question will be widely discussed, especially by general practitioners, as it may be necessary to bring a matter of such importance before our next Representative Meeting.—I am, etc.,

London, Sept. 30th. J. Fletcher.

TUBERCULIN TREATMENT.

Sir,—In the Journal of September 21st, page 745, Dr. Prest asks a pertinent question regarding the knowledge required to enable one to say how far the system of graduated doses has been successful in bringing cases of pulmonary tuberculosis to a favourable condition.

I presume the only way in which that question can be answered is by citing examples, just as Dr. Camac Wilkinson has done. Obviously this alone can be the most satisfactory plan since there are those who believe that hyperaëration alone can do as much for phthisical subjects as tuberculin. Here is one of several examples that have been made under my personal observation:

Nellie A., aged 23, laundry worker. Illness of three years' duration. Complained of cough with expectoration, loss of weight, and hoarseness with gradual loss of voice. General condition fairly good; weight, 9 st. 6 lb.

Examination.—Chronic left apical phthisis. Deficient expansion, with flattening over left apex. Well marked dullness. Fine crepitation behind and below left clavicle in front. Breath sounds broncho-vesicular and distant. Sputum loaded with tubercle bacilli.

On two previous occasions this girl had been under treatment in the phthisical wards in 1909 and 1910. On the first occasion she had been a patient for nine months and did well. But in a few months she returned as bad as she had been before treatment had begun.

On January 15th, 1911, treatment was begun with small doses of P.T.O., and on April 1st she had reached a dose of 1 c.cm. She had then no tubercle bacilli in her sputum (verified by repeated examinations by the antiformin method). Her weight had increased to 9 st. 12 lb.

During 1909 and 1910 she had never been permitted to leave the sanatorium during her entire residence. After the disappearance of the tubercle bacilli in April, 1911, that is after four months' treatment with tuberculin, she was allowed to return to work every morning at 6 a.m., her nights being spent at the sanatorium. On April 19th she began treatment with P.T. On August 14th she had reached the full dose, 1 c.cm. From beginning to end her course of treatment had lasted eight months. She had no symptoms of any kind, there being neither cough nor sputum. Her voice was as strong as ever it had been, and she felt as fit as possible. At the end of 1911 she left for Australia and the information we receive from her is that she is in perfect health.

That I submit is a good instance of what tuberculin in graduated doses can do in suitable cases. Sanatorium methods did not assuredly do for her what tuberculin was able to do.

There are those who are still sceptical as to the value of tuberculin. I wish they would zealously and rigidly give it a fair and impartial trial before they, literally speaking, consign it to the waste-paper basket. No one will presume to say tuberculin is the Alpha and Omega of treatment. Meantime, however, I can declare that a comparison of results in Leith between the present and pre-tuberculin days leaves no doubt as the great value of tuberculin.

Cases fail to benefit by tuberculin, as cases fail in sanatoriums. Every case that comes under notice is not subjected to tuberculin treatment. The application of tuberculin must be accompanied by a close study of each patient, and the method advocated by Arneth of blood examination goes far towards assisting one in the direction of treatment. I can commend it to the serious study of those who are interested.

Let me say in conclusion that many of our patients are now allowed to continue at work, live in their own homes, and still show progressive improvement under systematic tuberculin treatment. That feature to my mind is one that is too often overlooked, or perhaps I should say not prominently adduced in favour of treatment with tuberculin.—I am, etc.,

Wm. Robertson.

Public Health Department, Leith, Sept. 30th.

WHOOPING-COUGH AND IODOFORM INJECTIONS.

Sir,—I read with much interest Dr. Dewar's paper on this subject in the issue of the Journal for September 21st, and have read with equal interest the criticism of it by Dr. A. O. Adamson.

While quite admitting that Dr. Dewar has laid himself somewhat open to the charge of reasoning *post hoc, propter hoc*, in reporting one successful case of whooping-cough treated by the intravenous injection of iodoform, I think that instead of condemning his action as that of a simple enthusiast as Dr. Adamson has, we should regard it in quite another light. Whooping-cough is a disease that is notoriously difficult to treat, and any method of combating this complaint which promises rapid and complete cure is most certainly worthy of our serious attention, and I consider that Dr. Dewar has conferred a favour on his fellow general practitioners by reporting his first successful case of iodoform treatment of pertussis in the adult.

In the opening part of Dr. Adamson's letter he states that he is under the impression that equally good results might have been obtained "by many other forms of treatment, or by none beyond good hygiene." Now, if his statement is true, I am sure that hundreds of practitioners all over the country would be all too pleased to hear of those "other forms of treatment" which will cut short an attack of whooping-cough in ten days, the time required by Dr. Dewar to cure his patient by intravenous injection.

Even at the risk of being considered a "simple enthusiast," I beg to follow Dr. Dewar's example and record one case of whooping-cough in the adult which was cured in a week's time:

The patient was a married man, aged 30, who was said to have a very bad cough. On my first visit to the house I had the good fortune to see him in a paroxysm of coughing, and at once came to the conclusion it was pertussis, as his children had the disease at this time.

This man's attack was so severe that it was quite patent to me that unless something radical could be done at once to relieve him, he was going to have a very bad illness indeed.

Just then I was using an inhalation of formalin for irritable coughs, and decided to make this man give it a fair trial. The result was immediate relief, and in a short time complete cure of all symptoms of whooping-cough. In a week from the beginning of the inhalation treatment he was able to resume work, and has had no trouble with his chest since them.

If Dr. Adamson can point out any form of treatment for children which is as rapidly successful as Dr. Dewar and I have shown our respective treatments for pertussis in the adult to be, then he will confer a great boon on the profession and on the community at large.—I am, etc.,

South Shields, Sept. 28th. J. Bain, M.B.

EPIDEMIC JAUNDICE.

Sir,—I was much interested in Dr. Lyons's note on epidemic jaundice (British Medical Journal, September 28th, p. 794). While serving in South Africa during the late Boer war I had experience of a severe epidemic of jaundice in the districts of Aliwal North and Stormberg in Cape Colony during the winter months of 1901. It was attributed to the high altitude of these districts and the intensely cold nights followed by very hot days. The cases rapidly recovered when they were sent down to the coast to East London. Probably the epidemic of which Dr. Lyons writes may be due to colder weather this summer than usual, and possibly the district is fairly high up.—I am, etc.,

C. Richardson White, M.B.Edin.

Merthyr Vale, Glam., Sept. 28th.

Sir,—In the issue of the British Medical Journal for September 28th, p. 794, I was interested in a note by Dr. Lyons on epidemic jaundice. Having recently had several cases I may perhaps give my experiences.

The age incidence was from 6 to 16 years, and the cases occurred here and there in a scattered country district; only in one family had I more than one child affected. The cases presented symptoms almost exactly similar to those described by Professor Holt in his *Diseases of Infancy and Childhood* under gastro-duodenitis, and differed from Dr. Lyons's cases in the comparative mildness of the attacks. Commencing with a feeling of languor and loss of appetite, the attack was ushered in with vomiting and icterus, which was very marked in the conjunctiva. The faeces were clay-white and urine almost black. The temperature in no case went above 99°. There was in all marked epigastric tenderness but no itching or alteration of pulse, and in all, too, the symptoms passed off in less than a week.

The treatment adopted was, at the onset, a dose of calomel followed by a mild saline, fat-free diet, mainly milk well diluted, and after meals a mixture containing bismuth carbonate, sodium bicarbonate, sodium salicylate, with mucilage and anise water.—I am, etc.,

Cheriton Fitzpaine, Devon, Oct. 1st. D. H. Vickery.

INTRAPERITONEAL INJECTIONS OF OXYGEN DURING CERTAIN ABDOMINAL OPERATIONS.

Sir,—I have read with interest in the Journal of September 14th (p. 630) my friend Mr. H. J. Godwin's account of his method of using oxygen intraperitoneally. I should like to endorse from my own experience what he says as to the value of oxygen intraperitoneally and to call attention to the value of oxygen injected into joints for suppurative arthritis and other conditions.

During the past two or three years I have used oxygen to flush out the knee-joint in a number of cases of tuberculous and gonococcal arthritis, as well as for more acute suppurative conditions.

By rendering the joint tense with oxygen the remote parts of the joint are reached which are probably untouched by ordinary fluid irrigation.—I am, etc.,

London, W., Sept. 26th. C. Gordon Watson.

FORCIBLE FEEDING OF SUFFRAGE PRISONERS.

Sir,—On purely medical grounds, and quite apart from political or even medico-ethical considerations, I submit that this method of treatment of these particular patients is no longer justifiable, though I believe it was justifiable a year or two ago, when the hunger strikes began. No one will deny that forcible feeding is unpleasant (to put it mildly) to the patient, or that unpleasant treatment which cannot justify itself by success in a large proportion of cases is bad treatment if there is any other treatment available. However successful it may have proved in patients suffering from other diseases, the experience of the last year or two seems to prove pretty conclusively that it fails very frequently, if not always, in the case of the suffragist hunger strikers. It fails to improve their health or even to maintain it at the level at which the treatment was begun, and in the opinion of those who were responsible for the adoption of it and who carried it out, it would have failed to prevent death if continued much longer. Experience (a large number of experiments) has quite failed to justify it in these cases, and either the methods must be improved or the theory on which the treatment is founded must be overhauled. We must leave the methods to the experts, but every medical man can and ought to seriously consider the discrepancy between the theoretical effects and the practical results.

The theory seems to be that if we can put food into a man's stomach we can prevent him from dying of starvation, and practice has shown that the theory is pretty correct in certain classes of cases, but not universally. Ingestion of food is one thing; digestion, absorption, and assimilation are others; and physiologists and physicians alike maintain (we all know it for a fact) that digestion may be seriously interfered with or inhibited by various emotional conditions. It seems quite possible that digestion, absorption, and assimilation may all be more or less inhibited by an effort of the will, and in that case forcible ingestion of food into an unwilling patient would be as futile as leading the unwilling horse to the water. The emotional condition of these forcibly fed suffragists is quite sufficient to account for the failure of the ingested food to improve or maintain their health, and experiment has over and over again demonstrated the failure; there is really no discrepancy between theory and practice. As medical men we must come to the conclusion that neither in theory nor in practice is the forcible feeding of these patients justifiable, and, having come to that conclusion, we should in common humanity express it clearly and with no uncertain voice to all whom it may concern. Every medical society in the land should state its opinion after proper discussion, and the political leanings of various individuals in our profession would then cease to complicate the question. What are the prison doctors to do? Most of us sympathized deeply with them when the bitter attack was made on their humanity and integrity

some time ago, and we still sympathize with them in their difficult position, but since then they have had considerable experience of the treatment, and are now in a position to judge whether or not it is warranted by success. If not, they are bound as medical men to refrain from advising it, and if they were ordered by some higher power to practise it against their judgement (which is almost incredible) they would be fully justified in refusing to do so. If they diagnose with due care the condition of their patients, prognose to the best of their ability, report faithfully, and advise such treatment as in their judgement is likely to meet the case, and carry out as much of it as lies in their power, they will do their duty as men and medical men, and no one has a right to demand more of them. Only those of us who do more than this for our private patients will be able to find any fault in them, and there are not many of us!—I am, etc.,

Swinton, Manchester, Sept. 27th. J. PRICE WILLIAMS.

SIR,—Dr. Bateman, in his reply to my letter published in your issue of September 21st, defines the position of a prison doctor with great clearness. Dr. Bateman says that a prison doctor is, by virtue of his office, a constable, and therefore in duty bound to prevent the commission of any felonious act. My letter was written to call further attention to the fact that doctors were acting practically as prison warders, and were putting their medical skill to an improper use by carrying out forcible feeding against the wishes of their patients. The fact that prison doctors are constables explains how this abuse has arisen, but does not justify it. The prison constable-doctor has the power to force his patients to submit to medical treatment, however much they may object. The doctor in private or hospital practice—excluding asylum work—merely advises, and if the patient refuses the advice retires from the case. I believe Dr. Bateman is quite wrong in thinking that any private practitioner could carry out forcible feeding or any other form of treatment against his patient's wish. I do not agree that when a prisoner refuses food he intends to commit suicide. He intends at the risk of his life to frighten the prison authorities and the Government into altering or cutting short his sentence. The constable-doctor comes to the aid of the Government with his skill as a doctor, his power as a constable, and, using the term "medical treatment" as a cloak, commits an act which would be an assault if done by any ordinary doctor. The public trusts the profession, and has great faith in "medical treatment." The shame of allowing forcible feeding to go on rests, therefore, in a very special way on the medical profession. In their article published in the JOURNAL on August 31st, Sir Victor Horsley, Mr. Mansell Moullin, and Dr. Agnes Savill raised a corner of the cloak and allowed us all to see what lay beneath this "medical treatment."

There is one final argument which may appeal to those who think that, however unpleasant forcible feeding may be, justice cannot be administered without it. The thing is a failure; determined prisoners cannot be kept alive by forcible feeding, and many have had to be discharged. There will be no more forcible feeding in English prisons if the medical profession condemns it. I have purposely not referred to the suffragists; but the fact of this outrage having been committed on young and refined ladies has called public attention to medical treatment in our prisons, and will, I hope, lead to an end being made of what I can only describe as a scandal.—I am, etc.,

Manchester, Sept. 30th. JAMES W. MCINTOSH.

SIR,—Having had personal experience of six cases on whom forcible feeding has been perpetrated, I should like to endorse the excellent statements of Dr. Savill, Dr. Moullin, and Sir Victor Horsley.

It is not within the province of the profession to express opinion as to whether the treatment of prisoners by the Government is commensurate with their crime. But it is within its province, in a civilized country, to utter a protest when the treatment of prisoners is calculated to lead to permanent shattering of the prisoners' health.

The amount of damage likely to result from tube feeding depends on the mental attitude of the patient. Given the hearty co-operation of an intelligent patient who swallows the tube the risks are practically nil; given an obliging but stupid patient the risks increase; given a lunatic who resists they increase still more; given a highly intelligent person who determines on resistance to the extent of sacrificing life, the risks reach their maximum.

Before expressing an opinion of the suffragette forcible feeding, it is necessary to be personally acquainted with a sufficient number of them to understand the spirit underlying militancy.

I asked my first case, "How could you manage to keep it up?" The frail little lady replied, "There is only one way any one does manage to bear it, and to keep it up. That is never to let yourself stop thinking for an instant of how much better you are making things for all the women who are ever coming after you." She was released when her life had been seriously endangered, but took part in the window breaking. She was one of three who smashed the windows of a large firm. For demanding the same treatment as the ringleaders of the "conspiracy" she was again forcibly fed until her life was endangered. I do not wish to enumerate suffragette grievances, but it is necessary to indicate the frame of mind which engenders such passionate and intense resistance that the process of tube feeding becomes extremely dangerous.

Crime is less prevalent among women than men (the last annual report gave 131,000 men and 35,000 women). Further, 85 to 90 per cent. of women prisoners are prostitutes. Therefore classification means rather more to a woman than it does to a man. Prison opens a woman's eyes to realities of life in a way which nothing else does. It is a well-known saying amongst suffragettes that no matter how "peaceable" a woman is who happens to get sent to gaol, she will come out a "burning fiery flame." The Government has manufactured a thousand of these "burning fiery flames."

Personally I have never understood the logic of militancy, but I have so many friends amongst them that I feel I do understand the spirit of it. I am convinced that they are right when they say that they have a thousand members each of whom is willing and ready to suffer death for their cause. The W.S.S.P. has 6,000 full subscribing members, and nearly 100,000 adherents. In no organization on earth is there a stronger *esprit de corps*, or keener appreciation, and approbation, and sympathy for suffering undergone in gaol. Not one has ever yet "submitted" nor given way on a point of "honour." Such a spirit will never be broken by violence from the Government. Therefore, as psychologists and physicians, it is incumbent on us to protest against such barbaric proceedings.—I am, etc.,

London, W., Oct. 1st. ETTIE SAYER.

PERFORATION OF THE TYMPANUM AFTER SYRINGING.

SIR,—In a letter (of September 21st, p. 747) under the heading "Perforation of the Tympanum after Syringing," I see it is suggested that the retention of wax may be a useful protective to the natives about Natal. Also the question is asked as to whether there be any satisfactory treatment for tinnitus aurium other than that applied to the meatus, nasal passages, and Eustachian tube. With regard to the retention of cerumen, the advantages of removal certainly outweigh any protective properties it may afford. I would suggest the wearing of well-fitting rubber plugs (with a sufficient perforation for the transmission of sonorous vibrations) on dusty windy days. With reference to the treatment of tinnitus, none would be satisfactory without, if possible, removing the cause. If driven to symptomatic treatment, bromides or hybrobromic acid with strychnine, and blistering, perhaps, will be of most avail. A very valuable lecture on tinnitus and its treatment, by Dr. Dundas Grant, appeared in the *Clinical Journal* of February 10th, 1897, dealing very practically with the question.—I am, etc.,

London, W., Sept. 27th. H. CLAYTON FOX, F.R.C.S.Irel.

PREVENTION OF DENTAL CARIES AND ORAL SEPSIS.

SIR,—I have to thank you for the favourable notice of my book on the *Prevention of Dental Caries and Oral Sepsis*. There are two points, however, on which the reviewer makes statements not quite in accordance with facts, and which I think might be rectified

1. My work nowhere shows that "sweets" decrease the salivary secretion. On the contrary, they always increase it, but not so much as acids or the combination of acid-sweet.

2. I am not aware that I have stated that salivary secretion takes place continuously night and day. What I have said is that it exerts a continuous action night and day, and this, of course, by reason of the antifermentative action of potassium sulphocyanate, which clearly increases in amount in stagnating saliva; and also to some extent the precipitated mucin by decomposition gives rise to alkaline substances which tend to neutralize any acids formed.

—I am, etc.,

H. P. Pickerill, M.D.,
Director, Dental School, University of Otago,
August 20th, 1912. New Zealand.

Public Health
AND
POOR LAW MEDICAL SERVICES.

POOR LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.

A council meeting of this association was held at 34, Copthall Avenue, E.C., on September 27th. Dr. Balding, J.P., was in the chair. Eight gentlemen were elected members of the Association.

Winkleigh District.

The Honorary Secretary reported that the following letter had been sent to the Local Government Board in reference to the recent election of a medical officer to the Winkleigh district by the Torrington guardians.

Sir,

I am instructed by my council to bring under your notice the recent election of a district medical officer by the Torrington guardians. My council specially desires to draw the attention of your Honourable Board to the following points: (1) On several occasions the election was unduly postponed by the guardians, although a properly qualified candidate was before them, against whom no valid objections were put forward. (2) That such treatment of Dr. Harvey was unwarrantable, and tends to prevent suitable candidates from applying for Poor Law appointments, to the detriment of the Poor Law Service. (3) That the subsequent election of Dr. Clements proves that the said postponement was made in the interest of a certain person, and that the guardians were influenced by other motives than a desire to promote the welfare of the sick poor.

I enclose a newspaper cutting, which gives a report of the proceeding of the Torrington Board, when Dr. Clements was elected. From this it will be seen that the postponement amounted to a public scandal, and resulted in a petition against the guardians' action from the ratepayers of the district. The letter of Dr. Harvey clearly shows the unfair position any professional candidate must be placed in by such treatment, and the unjustifiable reflections that might be made in consequence on his reputation. But, perhaps, the most serious aspect of the matter, which this report brings into prominence, is that it appears to be a case in which a public office is made use of to obtain a candidate to carry on underpaid medical work in the Winkleigh district outside the Poor Law, in opposition to the local profession. It is, doubtless, known to you that in this district there has been a dispute between the local profession and the medical clubs, and the latter have had the utmost difficulty in getting a medical officer. The remuneration they offer is insufficient to attract any respectable practitioner, unless outside emoluments are added thereto. There is reason to believe that the appointment was made solely for the purpose of increasing the meagre stipend of the Winkleigh clubs, and to render it possible to obtain for these institutions a medical officer.

I am, yours truly,
Major Greenwood, M.D., LL.B.,
Honorary Secretary, Poor Law Medical Officers' Association of England and Wales.

Right Hon. John Burns, M.P.,
President of the Local Government Board.

The Honorary Secretary stated that this letter was sent by the Local Government Board to the Torrington guardians for their comment. That board did not make any comments, but the letter was adversely criticized in the local press by some of the officials of the Winkleigh clubs in respect to the underpayment of their medical officer. The fact remained that since the death of their last medical officer, who had been paid from £50 to £60 per annum, they had been unable to obtain another, and had been paying a deputy medical officer to do the work at the rate of £3 10s. a week. The appointment of this deputy medical officer as Poor Law medical officer to the Winkleigh district might at any rate be an inducement to him to make some permanent arrangement with the local clubs. The following letter had been received from the Local Government Board:

Whitehall, S.W.,
September 18th, 1912.

Sir,

I am directed by the Local Government Board to advert to your letter of the 24th August last relative to the office of medical officer for the Winkleigh district of the Torrington Union, and to state that they have given the matter consideration, and have not seen sufficient reason for withholding sanction to the appointment of Mr. J. H. Clements as medical officer for the district in question.

I am, Sir,
Your obedient servant,
J. Davy, Assistant Secretary.

Major Greenwood, M.D.

The council were of opinion that there had been grave administrative abuse in this election, and trusted that their representations would induce the Local Government Board to look more keenly into these elections.

Inclusion of Fees for Vaccination.

The council next considered the recent action of the Dartford guardians, who were endeavouring to include fees for public vaccination in the salary of the district medical officer. The Honorary Secretary said he had sent the following letter to the Local Government Board, and that the matter was still *sub judice:*

Sir,

I am instructed by my council to draw your attention to the proposal of the Dartford guardians to pay one of their district medical officers a salary to include therein fees payable to the same officer as public vaccinator.

My council desires to protest strongly against this proposal, and to point out that it is in its opinion entirely opposed to the policy of your Honourable Board. It has been repeatedly laid down in Orders and circulars that the administration of the Vaccination Acts by the guardians is to be kept entirely distinct from Poor Law administration, and that boards of guardians are not to utilize the fees of the public vaccinator to compensate Poor Law medical officers for inadequate remuneration for their Poor Law offices.

If the Dartford guardians be permitted to carry out this arrangement, the abuse that those circulars were intended to restrain would be given free play. It is further considered that it is in direct contravention of the Vaccination Acts.

I am, yours truly,
Major Greenwood, M.D., LL.B.
Honorary Secretary,
Poor Law Medical Officers' Association,

Right Hon. John Burns, M.P.,
President Local Government Board.

Revision of Poor Law Orders.

The council next considered a letter from the Departmental Committee appointed by the President of the Local Government Board to report upon the revision of the Poor Law Orders.

The Honorary Secretary said that he had received six copies of a draft of an Order to regulate the management of Poor Law institutions; that the criticisms of the Poor Law Medical Officers' Association were invited upon this draft, and that they were to be submitted to the Departmental Committee not later than October 15th. As the draft referred entirely to Poor Law institutions, Dr. Thackray Parsons had given special attention to it, and had kindly drafted a reply to the Departmental Committee. Dr. Toogood had also given his services, and had carefully considered the draft, and Dr. Parsons's criticisms, with which he was in almost entire agreement. Dr. Parsons read the draft of the proposed reply, which was keenly discussed by the council. Dr. Holder added some valuable criticism from the superintendent of a large Poor Law institution at Hull.

It was finally left to Drs. Parsons and Toogood to prepare the answer to the Departmental Committee having regard to certain amendments that had been suggested during the discussion.

Extension of District.

A letter was considered from a correspondent, who objected to a portion of a parish not mentioned in his contract with the guardians being included in his district. He said the various parishes comprising his district were recorded *nominatim;* and he could not understand how a part of one not named in the contract could be properly assigned to him. The Honorary Secretary said that at law there was an aphorism, "*Expressum facit cessare tacitum,*" so that this member seemed to have a case. But it was finally decided that it was impossible to give an answer without considering the actual contract.

Certification of Lunatics.

A workhouse medical officer wrote asking if the guardians could legally include in his salary fees for certifying lunatics, and for giving medical attendance to officers resident in the workhouse.

This was discussed by the council. It was contended by some that the inclusion of lunacy fees was opposed to the provisions of the Lunacy Acts; and with regard to attendance on resident officers at the workhouse, it amounted to providing at the expense of the rates medical attendance for presumably well paid officials. Dr. Parsons said that to his knowledge both these practices had been sanctioned by the Local Government Board in the metropolis. With regard to the Lunacy Acts, it was not compulsory on the justice to make any order as to payment of the certifying practitioner, and a justice was procured by the guardians, who consented to this arrangement. The council was unanimously of opinion that both these practices should be condemned. The object of the Lunacy Acts was to insure that impartial and unbiassed justices should examine lunatics. If a justice could be selected for one purpose, he might be for another. The Honorary Secretary was requested to make inquiries into the matter, and bring it again before the council.

LOCAL GOVERNMENT BOARD REPORTS.

Shaftesbury Borough and Rural Districts.—Shaftesbury is an old-world town, situated on a plateau 700 ft. above sea level, and overlooking the Vale of Blackmoor. The country around which occupies the north-west corner of Dorset is included in the area of the Shaftesbury rural district. A very large dairying industry is carried on in the district, the average daily output of milk being about 10,000 gallons. The conditions under which the trade is carried on are related in a report (new series No. 67) of Dr. F. St. George Mivart to the Local Government Board. Regulations under the Dairies, Cowsheds, and Milkshops Orders have been adopted by the rural council, but they are apparently not enforced. There are 130 cowkeepers registered and 75, including members of the district council, who are not registered. A few cowsheds Dr. Mivart describes as being well kept, and many others had excellent features, but for the most part they were unsatisfactory, and the condition of many was bad. The walls and floors were in a foul condition, there was a want of ventilation and light, deficient cubic space, and defects or absence of drainage. In many instances pigs were kept in the same sheds as the cows. The general condition of the fold yards is described as bad. Manure was accumulated with liquid filth in vast quantities close to the openings of sheds. In two instances cows were seen plunging through this filth in order to enter the sheds to be milked, their udders trailing in the manure. At many farms there was found to be a lack of water. At some, the property of a Cambridge college, farmers are obliged all the year round to fetch water in churns from a long distance. Of the twenty-nine members of the rural district council twenty-two are tenant farmers, practically all engaged in milk businesses in one way or another. The ineptitude of the council may be gathered from the fact that the inspector of nuisances was definitely instructed by resolution that he should arrange for the tenant and the agent of a farm to be present whenever he went to inspect it. As the inspector is also inspector of nuisances to the town of Shaftesbury and surveyor to the urban and rural districts, it necessarily follows that this restriction hampers very considerably—as no doubt it was intended it should—his inspections of the dairy farms in the district. The housing regulations seem to be almost ignored both in the borough and rural district. Forty houses were inspected in the rural district, and the agent of seven was asked to remedy defects. A committee of the council was appointed to view the houses, but "no result seems to have followed the labours of the committee." The attitude of the borough council on sanitary matters may be gathered from the following extract from Dr. Mivart's report: "From the minutes of a meeting (date not recorded) between August, 1908, and January, 1909, it appears that a committee of five members was appointed to inspect and report upon the row of miserable dwellings called 'the Pool,' but I cannot trace any further reference to this committee or its doings. The condition of the place in question when I saw it seemed to indicate that the committee's labours had been unfruitful."

Ince-in-Makerfield Urban District.—The sanitary administration of the urban district of Ince-in-Makerfield, where there is now a population of over 22,000 persons, was reported upon unfavourably by Dr. Franklin Parsons to the Local Government Board in 1879 and again in 1886. In the report (new series, No. 65) of Dr. E. P. Manby, which has just been issued by the Board, there is not much evidence of great progress having been made in the direction of remedying unsatisfactory conditions. In 1879 the infant mortality-rate was equal to 181 per 1,000 births. In 1909 it was 212, and in 1911 it was 184 per 1,000. Dr. Manby considers that the probable causes of this high rate are the same as those stated by Dr. Parsons thirty-three years ago, namely, local insanitary conditions and social and domestic conditions and habits unfavourable to health. All that appears to have been done in the period which has elapsed between the visits of the two inspectors is the sewering and paving of a portion of the district, reducing the size of privy middens and improving the system of scavenging. Quite lately a female health visitor has been appointed who will act under the direction of the medical officer of health in connexion with administration made possible through the adoption by the council of the Notification of Births Act. There are about 4,500 houses in the town, of which no less than 4,000 are provided with privy-middens, although in many cases there is not a separate closet for each house. The cost of emptying these privies amounts to nearly £1,700 per annum, a sum nearly equal to a sixpenny rate. As the streets are already sewered this appears to be a very costly proceeding, and it would be more economical for this yearly expenditure to be used for the conversion of the privies to waterclosets under the provisions of the Public Health Acts Amendment Act, 1907.

Universities and Colleges.

UNIVERSITY OF LONDON.

Advanced Lectures in Physiology.

THE following advanced lectures in physiology are announced to be given during the first term:

Professor W. M. Bayliss, F.R.S.: Eight lectures on the action of enzymes at University College, on Fridays, at 5 p.m., beginning on October 25th.

Dr. F. S. Locke: Four lectures on the physiology of the mammalian heart at King's College, on Mondays, at 4.30 p.m., beginning November 11th.

Dr. E. L. Kennaway and Mr. J. H. Ryffel: Eight lectures on metabolism of carbohydrates and fats at Guy's Hospital, on Thursdays, at 4 p.m.

Lectures by Professor of Protozoology.

Professor E. A. Minchin, F.R.S., will give a general course of twenty lectures on protozoa at the Lister Institute of Preventive Medicine on Mondays, Wednesdays, and Fridays, at 5 p.m., during the second term. These lectures, which are free, will be addressed to honours B.Sc. students and to medical men, and will be followed by exhibits of preparations as occasion requires.

The Lister Institute of Preventive Medicine.

Owing to the appointment of Dr. Dean to the Chair of Pathology in the University of Sheffield, he will be unable to deliver the lectures of which notice has been given. The remaining lectures in the course will be given as arranged.

VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

FIRST M.B.—*Part I, Inorganic Chemistry and Physics*: Alice M. A. Holt, Dorothy Potts, C. R. Sandiford, D. M. Sutherland, *R. L. Newell, *W. Stansfield, †A. M. Cotes. *Part II, Elementary Biology*: A. M. Cotes, E. R. Gilmore, C. R. Sandiford.

* Physiology only. † Chemistry only.

UNIVERSITY OF SHEFFIELD.

DR. HENRY ROY DEAN, Assistant Bacteriologist to the Lister Institute, has been appointed to the Joseph Hunter chair of pathology in the room of Professor J. M. Beattie, who has become Professor of Bacteriology in the University of Liverpool. Dr. Arthur Hall has succeeded Professor Beattie as Dean of the Faculty of Medicine.

The Services.

VOLUNTARY AID DETACHMENTS AND THE USE OF BRASSARDS.

AT the annual meeting of the Central Council of County Territorial Associations of Scotland, England, and Wales, held in Glasgow on September 25th, the question of the wearing of brassards by Voluntary Aid Detachments of the Red Cross Society during peace was under consideration. Recently the Army Council, in a communication to the County Territorial Force Associations, intimated that it had decided to prohibit altogether the wearing in time of peace of the Red Cross emblem in the form of a brassard. This decision was to prevent confusion, as the official brassard is only issued on mobilization, and the Council considers that in time of peace the use of the Red Cross should be restricted to official purposes, to be worn only on duty or in uniform, and in the form of a badge, or at least otherwise than as a brassard. The Standing Committee of County Presidents of the Red Cross Society has urged the Council to press the War Office to reconsider its decision, and allow Voluntary Aid Detachments to wear the brassard as many have been doing for two or three years. The chairman explained that the War Office sanctioned the wearing of the brassard when the Red Cross Society was raised, but a section of the Geneva Convention, dated 1911, was passed to the effect that brassards should be used only on mobilization. There was

a risk of the brassards (if they were continued to be worn as previously) getting into the wrong hands before mobilization. The Central Council decided that there was no alternative but to acquiesce in the decision of the War Office, which was itself bound by the Geneva Convention. The difficulty in the case of women might be got over by their wearing the Red Cross badge on their dresses, and in the case of men by putting a white cross inside the red one on the brassard now in use. But they recommended that brassards should be discontinued as soon as possible, and a white disc with red cross tied round the arm with black string. It would be desirable to print on these discs "to be exchanged for the official badge on mobilization."

DISTINGUISHED SERVICE REWARDS.

Surgeon-General A. D. Gulland, R.A.M.C. (ret.), and Deputy Surgeon-General E. M. Erskine, C.B., R.A.M.C. (ret.), have been granted rewards for distinguished and meritorious services.

Obituary.

Lieutenant-Colonel John William Jerome, retired pay, late Royal Army Medical Corps, who died at Norwood on September 9th, aged 55, received his education at King's College, and took the diplomas of M.R.C.S.Eng. and L.S.A. in 1880. He joined the Army Medical Service as surgeon in 1882, became Surgeon-Major in 1894, and was promoted to the rank of Lieutenant-Colonel in 1902. During the South African war he served with the Eighth Division, and was present during the operations in the Orange River Colony, including the actions at Biddulphsberg and Witteberger and in Cape Colony south of the Orange River, and received the medal. He retired in October, 1902.

Medico-Legal.

WORKMEN'S COMPENSATION.

The Function of a Medical Assessor.

In a case stated for the opinion of the Court of Session (July 1st) certain important observations were made as to the duty of medical assessors.

The question was whether a man was fit to return to work. The medical assessor, besides assisting the sheriff with his views on the evidence, had reported on the applicant's condition as disclosed by an examination at the conclusion of the proof. In arriving at a decision to end the compensation, the sheriff was influenced by the medical assessor's report. The questions for the court were (1) whether it was competent for the medical assessor to examine the applicant and report to the sheriff his condition; and (2) whether the sheriff was entitled to take into consideration the medical assessor's report and end the compensation.

The court adhered to the decision of the sheriff-substitute and dismissed the appeal with the expenses to the respondents. It was made a point by the appellants that there was no evidence led by the employers as to the workman's condition between the date at which the court was asked to end the compensation and the date of the proof before the sheriff, and therefore the sheriff was not in a position to decide as to the workman's condition at the date of the judgement. The court held that if the workman had led evidence to show that he had had a recurrence of incapacity from the accident before the date of the proof, the sheriff might not have been justified in ending the compensation in the absence of rebutting evidence by the employers; but the fact that the employers had not alone led evidence for the period in question was not in itself sufficient to impugn the sheriff's decision. It was also said that it was incompetent for a medical assessor to examine the workman at the conclusion of the evidence without submitting himself to cross-examination on the result of his examination of the workman; but the court were of the opinion that while such an examination might not be competent in an ordinary case, in this case the point did not arise, because the examination of the workman was with the workman's own consent as well as that of the employers. On the question as to whether the arbitrator was entitled to allow the report of the medical referee as to the result of his examination of the workman to influence his mind in coming to a decision to end the compensation, the court were of opinion that the obvious meaning of the word "report" was "opinion"; and that, as the arbitrator had requisitioned the services of a medical assessor he was entitled, if not bound, to accept the opinion of the medical assessor, especially as the consent of parties had been obtained before the examination in question.

Injured when Cutting Corns.

In this case (Bradford, July 5th) it appeared that the plaintiff was in the employ of the respondents. On April 20th while cutting a corn she made it bleed. She was bathing her foot when she slipped and smashed the basin, severely cutting her toe. She was attended by a doctor for ten weeks, and had only just recovered sufficiently to be able to resume work.

It was submitted that the plaintiff was cutting her corn partly to make herself more efficient for her work, and it was therefore a risk connected with her duty.

Without calling on the defence His Honour gave judgement for the respondents.

Diabetes or Accident.

In Shelton Coal and Iron Co. *v.* Leese (Hanley, May 23rd) the employers applied to Judge Ruegg (who sat with Dr. King Alcock as medical referee) to terminate the compensation paid to a timberer on the ground that he was able to work. It appeared that on January 3rd, 1911, while helping another man to lift a loaded tub on some rails, Leese received an internal injury, which prevented him moving without great pain in the lower part of the body. For the applicants it was contended that he would benefit rather than otherwise by taking on some kind of employment. On the other hand, it was submitted, on behalf of the respondent, that he was suffering from diabetes set up by the accident, and that he was unfit for work, it being stated that his medical advisers were against his accepting the work offered to him by the applicants.

Dr. E. E. Young, in the course of his evidence for the applicants, said that he had examined the man on several occasions, and from the results of his examinations thought that he would not, while at work, feel the pain from which he complained in June last. What he was suffering from was general loss of tone. He advised that he should go back to light work in order to recover his tone. On a subsequent examination the respondent said that he had been told that he was a cripple for life, and that he did not think he should ever do any work again. He examined the man's heart and chest, which were quite normal. The man complained of some ailment in the lower part of the body, which witness attributed to the general low condition. He again thought the man could do some light work, and that it was the finest thing for him. He had not found diabetes, the amount of urine not being sufficient for both tests, and he had only examined for albumen. He also said he should doubt whether diabetes would be brought on by an accident. But even if it had, it would not do him any harm to do light work.

Dr. F. Shufflebotham, called for the respondent, deposed to examining Leese on June 14th, 1911, several times since, and again on May 15th of this year. The man gave him the history of the accident. While lifting he hurt himself inwardly and fainted. On recovering, he found he could not straighten himself. He said he suffered greatly from thirst and frequent passage of urine. In June last he said he was drinking six or seven quarts of water a day besides other things. The man also told him that he had lost three stone in weight since the accident. It would be unlikely that a man who had lost over three stone in weight, mostly by removal of fat from the abdomen, would feel the dragging down weight so much afterwards as before. The urine was loaded with diabetic sugar.

His Honour suggested that many men did go back to work who suffered from diabetes.

Dr. Shufflebotham: Not with diabetes of this nature. Witness did not think the disease had been going on for years. The man would not have been able to do the work he did down to the accident, and he would not have lost flesh so rapidly as he did after the accident. It was quite possible that diabetes might be due to the accident—there were many recorded cases. The man had not been treated for diabetes before the accident.

Supplementing Dr. Shufflebotham's evidence, Dr. R. A. Rowley Moody said that the most eminent authorities on diabetes gave traumatism as the principal immediate cause. He handed up a paragraph of Sir Clifford Allbutt's system to support this view. Another point, though he did not urge it as absolutely conclusive, supported the view that the diabetes had not existed for a very long time, and that was the absence of albumen in the urine, as to the absence of which he was in complete agreement with Dr. Young and Dr. Douglas. In cases of severe diabetes, such as Leese was suffering from, albumen invariably appeared in the urine if the disease had existed for a sufficiently long period. Another important point was, that in severe cases of diabetes fatty degeneration of the heart was a common result, and there was evidence that this existed in Leese's case. In answer to His Honour, Dr. Moody said diabetes was more frequent in stout than in thin people.

In the event His Honour said that he was satisfied that the man was unable to work, and that the disease was more likely to be due to the accident than to natural causes. He therefore dismissed the application.

LOCUMTENENTS AND INQUEST FEES.

A correspondent asks if a locumtenent is entitled to keep for himself inquest fees paid to him while in charge of his principal's practice.

*** This question has been repeatedly answered in the negative. A locumtenent, in the absence of a special agreement to the contrary, is entitled to nothing beyond the payments made by the principal for his services, and certain railway expenses. All fees for professional work done, while in his principal's service are the property of the principal.

Medical News.

THE St. Mary's Nursing Home, Chiswick, will be opened by Sir Anthony Bowlby on Tuesday next, October 8th, at 4 p.m.

A SERIES of post-graduate clinics on the lines of those in recent years will be given at the Ancoats Hospital, Manchester, by the members of the hospital staff, commencing on Thursday next, October 10th, at 4.15 p.m.

THE winter session of the Post-Graduate College, West London Hospital, Hammersmith Road, W., commences on October 14th, when Dr. Seymour Taylor will give the opening address at 5 p.m., the subject selected being Medical Education, Then and Now.

THE dinner which the medical men attending the demonstrations at the Kennington Road Tuberculin Dispensary proposed to give to Dr. Camac Wilkinson on October 7th has been unavoidably postponed till after October 15th.

THE winter term of clinical lectures and demonstrations at the National Hospital for the Paralysed and Epileptic, Queen Square, London, will begin on October 8th, when Dr. James Collier will lecture on bulbar paralysis at 3.30 p.m. Further particulars can be obtained on application to the Dean of the Medical School at the Hospital.

THE opening meeting of the New London Dermatological Society for the session will be held on Thursday, October 10th, at the Western Skin Hospital, Hampstead Road (close to Tottenham Court Road), at 4.30 p.m., when Dr. G. Stopford-Taylor, of Liverpool, will deliver an address on some practical points in the treatment of eczema. All medical practitioners are invited.

A SPECIAL post-graduate course dealing with the diagnosis and treatment of pulmonary tuberculosis, including the use of tuberculin, is to be given at the Brompton Hospital for Consumption in November. The fee for the course, which begins on November 4th, is 5 guineas in the case of those who are not already connected with the institution. Further information may be obtained from the Dean, Dr. Cecil Wall.

THE Lewisham Memorial to the late King—a new bacteriological and *x*-ray department for St. John's Hospital, Lewisham—is to be opened on Thursday afternoon next by Major Sir Edward F. Coates, Bart., the member of Parliament for that borough, and Sir Almroth Wright.

THE opening meeting of the session 1912–13 of the Hunterian Society will take place on Wednesday, October 9th, when Dr. Frederick Taylor will deliver at the London Institution, Finsbury Circus, at 9 p.m., the first lecture of the society. The subject selected is sleepiness. Mr. A. H. Tubby will deliver his address as president on October 23rd. The second Hunterian lecture will be delivered on January 8th by Professor Arthur Keith, who has taken for his subject the history and nature of certain specimens alleged to have been obtained from the *post-mortem* examination of Napoleon the Great. A special feature of the session will be the clinical afternoons at the Westminster Hospital on November 13th, and at the London Hospital on February 26th.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society, was held at 429, Strand, London, W.C., on September 20th, 1912, Dr. F. J. Allan in the chair. The accounts presented showed that the claims in August were slightly below the expectation. There are 50 cases of permanent disablement on the society's books, and these alone account for nearly £5,000 per annum in sickness benefit, which will continue until age 65 or death previous to that age. These figures show conclusively the great advantages accruing to members of the medical and dental professions by joining such a society, which, for a comparatively small annual premium, is able to pay such benefits. It was reported to this meeting that a grant of money had been made to the widow of a deceased member by the Royal Medical Benevolent Fund, to which the society subscribes 100 guineas per annum; also that a son of a deceased member was elected to a foundation scholarship at Epsom College, to which also is subscribed 100 guineas a year. The new proposals are well up to the average for the eight months ending in August, but far below what they ought to be when all the advantages of membership offered are taken into consideration. Prospectus and all further information to Mr. Bertram Sutton, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, W.C.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

DR. A. CECIL HINCKS (Wells, Somerset) desires to hear of an institution that would receive a woman, aged about 47 years, paralysed, aphasic, and with incontinence. A payment of from 7s. to 10s. a week could be made, or possibly a little more with outside help.

SOUTHAMPTON desires to know of any institution from which he could buy a goat in milk which has had its thyroid gland removed.

ANSWERS.

DR. C. H. D. ROBBS (Grantham) writes in reply to "Cornishman's" query in the BRITISH MEDICAL JOURNAL of September 21st: A simple and effective apparatus for preventing dislocations of the shoulder was made for me by Messrs. Allen and Hanburys at a cost of 3s. 6d. It consists of a chest strap with buckle, to encircle the chest just below the axillae, an arm strap, and an adjustable link between the two. The patient for whom I employed it had repeated dislocations before wearing it, but remained free for over a year whilst using it. It is quite easy to adjust the buckle so that any desired limitation of range of movement of the arm can be obtained.

LETTERS, NOTES, ETC.

THE BLOOM UPON THE GRAPE.

DR. GEORGE PERNET (London, W.) writes: The latest atrocity in food-faking I have come across is an artificial bloom for black grapes. The stuff, I am told, is sprayed over the grapes, giving them, I admit, a beautiful bloom—painting the lily with a vengeance. But the bloom produced is almost too beautiful to be real. I discovered the fake by the rubbery taste of the grapes and the crinkling of the skin when pinched up between the finger and thumb. Perhaps some of your readers know more about it than I do. At any rate, "Caveat emptor."

"SECRET REMEDIES."

X. writes: I keep a copy of *Secret Remedies* hung up in my waiting room and find that it excites much interest. Another copy I lend out to any one who wishes to continue his studies. By this means valuable information is imparted to those who are in most need of it—the working classes. One man after keeping the book a longer time than usual explained that it had been the round of his workshop.

IODINE AS A SURGICAL DRESSING.

DR. P. B. COUSLAND (Edinburgh) writes: The following testimonies to the efficiency of iodine as a first-aid dressing under the most unfavourable conditions are worth recording: Dr. H. G. Barrie, writing in the *China Medical Journal* on the Red Cross work at Hankow during the recent revolution, says: "When first aid had been skilfully applied with iodine dressings results were unmistakably good, and one regretted that this dressing was not more generally applied." A correspondent, writing of the same fighting, tells me: "The field workers were supplied with bandages, gauze, splints, morphine, and iodine. A 5 per cent. solution of iodine was applied to all wounds. In from one to twelve hours, and sometimes longer, most of the patients were carried off the battlefield into the base hospitals. No bad results were found from iodine even in cases where considerable absorption undoubtedly took place, as in shrapnel wounds. The splendid results from a free use of iodine, both in first-aid work and in the hospitals, made many of the Red Cross doctors staunch preachers of the gospel of iodine."

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes restante* letters addressed either in initials or numbers.